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ANALYSIS OF WAVE SPECTRA AT STATION 'KILO'. SUPPLEMENT.(U)
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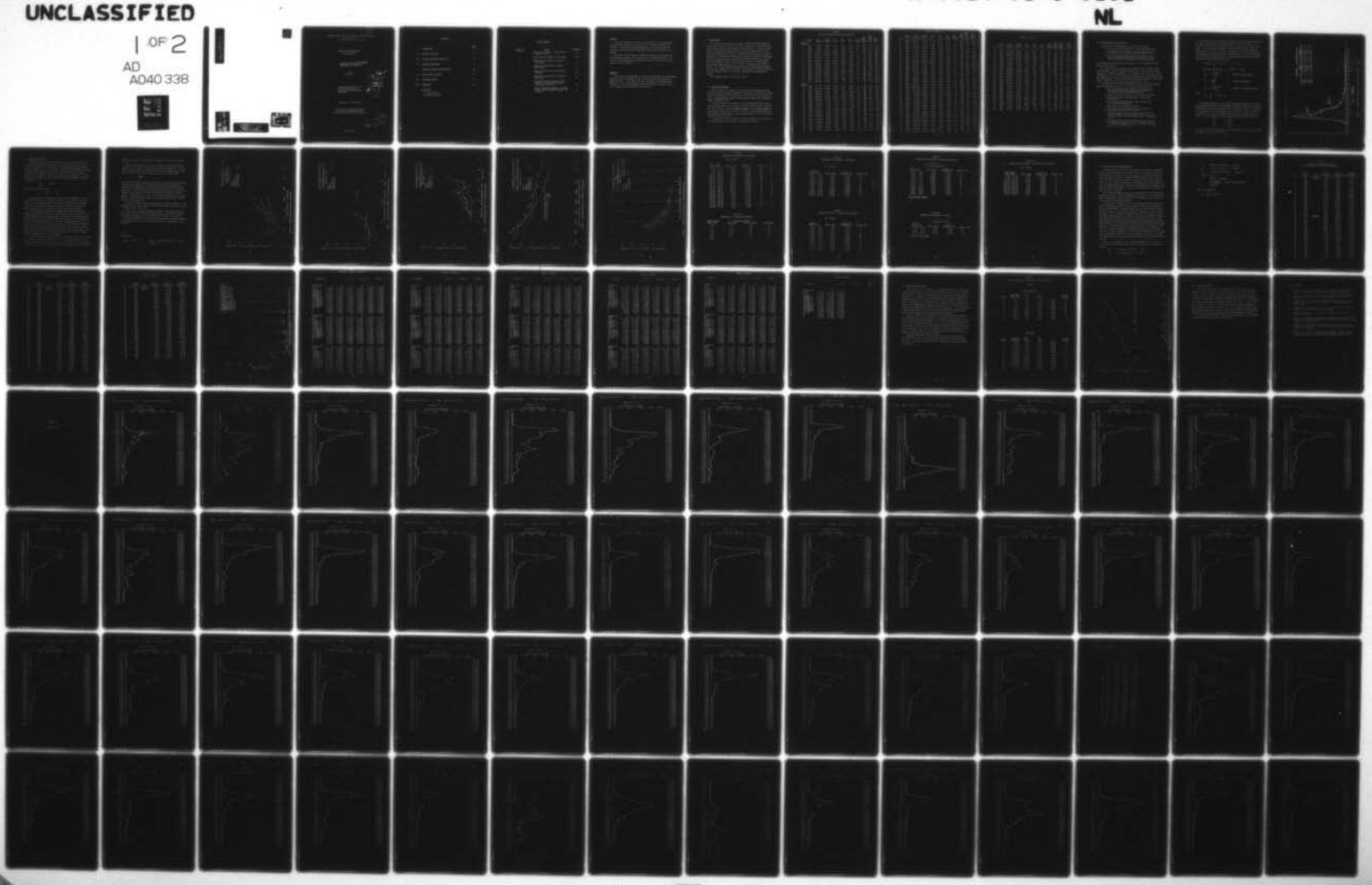

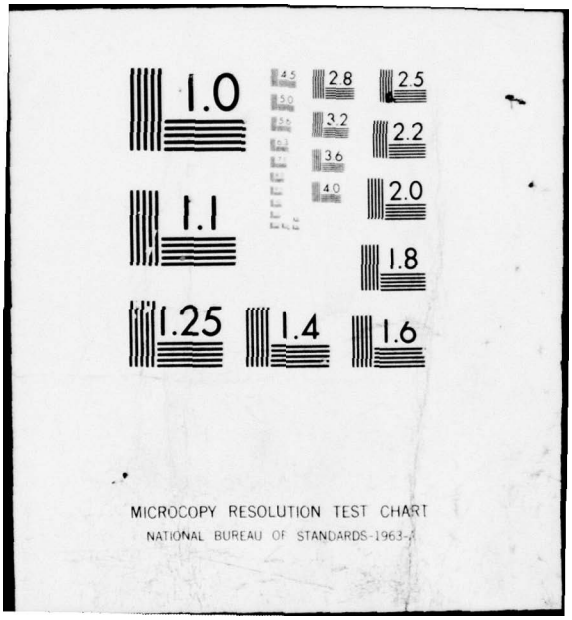
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WEBB INSTITUTE OF NAVAL ARCHITECTURE
CRESCENT BEACH ROAD
GLEN COVE, NEW YORK 11542

ANALYSIS OF WAVE SPECTRA AT STATION "KILO"

by
D. Hoffman

Supplement to Final Report

This research was carried out under
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General Hydrodynamics Research Program

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ABSTRACT

This report presents the results of the analysis of a limited sample of wave spectra obtained for Station 'Kilo' in the North Atlantic (93 records). Correlation of measured parameters, such as wave height and period, with surface log data (wind speed, observed wave height) is presented.

Wave spectra were grouped by height and by period and resulting average parameters compared. Plots are given of the spectral families. Because of the limited sample available for Station K, results are less conclusive than for Station I.

FOREWORD

This report is a supplement to, "Wave Data Application for Ship Response Predictions", by D. Hoffman, which is the final report under Contract No. N00014-73-C-0101. It is similar in scope and format to the SNAME report, "Analysis of a Stratified Sample of Ocean Wave Records at Station 'India'," by D. Hoffman and M. Miles, based on (1) and (4).

I. INTRODUCTION

The object of this study was to select a limited stratified sample of wave records from Station 'Kilo' in the North Atlantic in a similar fashion to that used in selecting the Station 'India' sample (4). Thus equal probability of seasons was maintained, and all records of Beaufort No. 6 and above were automatically included. A spectral analysis of each record was performed, and the maximum mean-to-peak value and mean period were determined. The spectra were then used to study the statistical properties of various spectral parameters and were correlated with parameters of log book data, such as wind speed, direction, etc. Finally, a spectral family based on Station 'Kilo' was obtained, limited somewhat by the data sample available. This was then compared with the similar, more extensive, spectral family generated for Station 'India', and the effect on several ship responses was studied.

The location of 'Kilo' was 45° N., 16° W.

II. METHOD OF SELECTION

The 93 records from Station 'K' used in this wave study project were selected to reflect an equal breakdown into seasons. They were all recorded at noon, and constitute a fairly representative sample of wind speed variations. The seasonal distribution of data closely follows that of Station 'India' described in (1).

The wave records were obtained by two different weather ships fitted with Tucker wave meters over a period of 13 years (1955 to 1967). The data from the two weather ships (OWS Weather Explorer and OWS Weather Reporter) were selected by Webb Institute from the files of the National Institute of Oceanography in Great Britain. The data were obtained in the form of photocopies of paper strip charts.

A list of the records selected, with their appropriate wave parameters and corresponding surface log data, is presented in Table I.

Table I

Wave Characteristics and Surface Log Data

N	Record No.	Date Dy-Mo-Yr	H(1/3) (Feet)	T(-1) Sec.	T(1) Sec.	T(2) Sec.	Wind Speed	Wind Direc. (Deg.)	Ob. Wave Ht. (ft.)	Ob. Period Sec.
Explorer										
1	2001	4-9-55	3.990	8.86	7.73	7.18	18	250	3.0	8.5
2	6006	5-9-55	7.524	7.30	6.36	6.00	24	340	5.0	8.5
3	2002	6-9-55	6.171	10.08	8.91	8.21	13	200	5.0	10.5
4	2003	9-9-55	10.875	10.49	8.76	7.78	8	320	11.0	10.5
5	2004	12-9-55	8.283	8.95	7.68	7.10	22	0	8.0	10.5
6	2005	16-9-55	5.497	7.44	6.79	6.46	10	340	6.5	10.5
7	2006	17-9-55	8.756	10.04	8.68	7.93	15	80	6.5	12.5
8	2007	23-9-55	11.014	10.27	8.97	8.23	15	280	8.0	10.5
9	2008	26-9-55	4.642	4.71	4.54	4.49	11	0	5.0	6.5
10	2009	9-3-56	14.742	8.44	6.97	6.36	24	180	7.25	8.5
11	2010	12-3-56	16.411	13.53	11.56	10.24	10	140	14.0	14.5
12	2011	13-3-56	16.622	9.28	8.07	7.41	18	290	13.0	12.5
13	5001	21-3-56	32.905	11.23	9.17	8.10	37	300	14.0	12.5
14	2012	24-3-56	17.525	9.30	8.29	7.76	35	290	14.0	10.5
15	2013	26-3-56	8.964	8.25	7.28	6.81	16	270	8.0	10.5
Reporter										
16	2014	11-3-59	21.436	12.08	10.37	9.40	31	250	9.5	10.5
17	2015	12-3-59	12.836	12.33	11.13	10.30	13	200	8.0	12.5
18	2016	23-3-59	14.571	10.56	9.26	8.60	40	290	9.5	10.5
19	2017	26-3-59	8.251	9.75	8.83	8.27	22	200	6.5	8.5
20	6005	28-3-59	14.019	11.87	10.53	9.61	19	230	6.5	10.5
21	5002	29-3-59	29.635	14.16	12.36	11.19	28	280	13.0	14.5
22	2018	17-9-59	4.640	8.90	7.82	7.29	26	290	14.0	6.5
23	2019	19-9-59	4.399	8.34	7.46	7.06	22	320	9.5	8.5
24	2020	20-9-59	3.298	9.16	8.25	9.81	14	220	1.5	5.0
25	2021	21-9-59	7.759	11.98	11.05	1037	16	220	5.0	10.5
26	2022	23-9-59	7.139	11.82	10.70	9.97	5	130	0	0
27	6004	26-9-59	9.943	11.11	10.14	9.51	16	290	6.5	8.5
28	2023	27-9-59	6.073	9.97	8.91	8.32	38	320	6.5	8.5
29	2024	1-10-59	8.921	8.33	7.46	7.00	8	180	0	0
30	2025	2-10-59	7.088	8.95	8.16	7.74	14	200	3.0	6.5
31	2026	3-10-59	8.452	10.46	9.37	8.45	27	0	3.0	6.5
32	2027	5-10-59	16.059	9.81	8.68	8.09	22	50	11.0	8.5
33	2028	4-4-60	10.281	10.03	9.12	8.56	27	210	8.9	10.5

Table I (Cont'd)

N	Record No.	Date Dy-Mo-Yr	H(1/3) (Feet)	T(-1) Sec.	T(1) Sec.	T(2) Sec.	Wind Speed	Wind Direc. (Deg)	Ob. Wave Ht. (ft.)	Ob. Period Sec.
34	2029	11-4-60	7.388	11.10	10.10	9.51	8	340	8.0	10.5
35	2030	13-4-60	7.911	12.05	11.03	10.31	18	280	8.0	12.5
36	3001	1-4-63	9.168	9.08	7.95	7.40	6	180	0	0
37	3002	3-4-63	4.506	9.36	8.19	7.63	13	110	3.0	6.5
38	3003	7-4-63	15.795	7.94	7.18	6.77	37	90	11.0	10.5
39	3004	8-4-63	6.873	8.89	8.00	7.00	8	160	1.5	6.5
40	3005	14-4-63	10.381	9.11	7.86	7.29	35	210	11.0	10.5
41	3006	17-4-63	13.453	10.24	9.23	8.60	19	270	9.5	8.5
42	3007	20-4-63	25.588	11.28	9.80	8.89	40	270	1.5	10.5
43	3008	22-4-63	18.914	10.74	9.50	8.77	42	300	11.0	10.5
44	3009	25-4-63	7.795	9.43	8.59	8.12	8	30	3.0	8.5
45	3010	29-5-63	6.562	9.55	8.25	7.58	71	40	5.0	6.5
46	6003	1-6-63	11.295	10.39	8.90	8.11	21	50	6.5	8.5
47	3011	7-6-63	4.970	6.43	5.95	5.73	14	190	9.5	6.5
48	3012	9-6-63	5.222	7.87	7.33	7.06	2	10	0	---
49	3013	10-6-63	3.599	5.70	5.20	5.02	15	160	9.5	6.5
50	3014	13-6-63	3.661	9.02	8.10	7.65	25	250	1.5	5.0
51	3015	15-6-63	3.184	11.66	10.59	9.84	10	320	1.5	6.5
52	3016	28-11-63	11.316	7.70	6.95	6.59	18	340	5.0	5.0
53	3017	29-11-63	10.075	8.90	8.10	7.64	7	180	0	0
54	3018	30-11-63	19.072	14.11	11.73	10.34	25	320	6.5	8.5
55	3019	2-12-63	26.124	11.67	9.92	8.95	36	20	5.0	12.5
56	6002	3-12-63	9.084	9.54	8.52	7.96	5	40	0	0
57	3020	4-12-63	14.202	10.20	8.77	8.00	22	290	6.5	6.5
58	3021	5-12-63	12.521	9.32	8.40	7.88	30	50	5.0	6.5
59	3022	6-12-55	10.318	9.06	8.38	7.99	25	90	5.0	6.5
60	3023	7-12-63	9.511	9.00	8.22	7.77	12	50	6.5	6.5
61	3024	9-12-63	5.062	10.73	9.51	8.80	17	180	0	0
62	3025	11-12-63	18.663	12.45	10.69	9.64	6	300	1.5	5.0
63	3026	12-12-63	19.915	13.20	11.94	11.00	13	340	6.5	6.5
64	3027	14-12-63	25.747	9.75	8.71	8.07	37	80	11.0	10.5
65	3028	15-12-63	22.559	10.43	9.28	8.61	35	100	13.0	8.5
66	3030	16-12-63	24.961	9.86	8.51	7.88	38	110	11.0	8.5
67	3031	17-12-63	17.074	9.92	9.01	8.48	38	140	6.5	8.5
68	3032	18-12-63	18.455	12.17	10.69	9.84	5	180	0	0
69	3033	19-12-63	12.756	10.86	9.65	8.99	18	80	3.0	5.0

Table I (Cont'd)

N	Record No.	Date Dy-Mo-Yr	H(1/3) (Feet)	T(-1) Sec.	T(1) Sec.	T(2) Sec.	Wind Speed	Wind Direc. (Deg.)	Ob. Wave Ht. (ft.)	Ob. Period Sec.
70	3034	20-12-63	11.341	9.97	8.90	8.29	16	40	5.0	6.5
71	3035	23-12-63	12.206	9.69	8.77	8.23	19	50	3.0	5.0
72	3036	23-12-63	10.022	13.35	10.90	9.49	31	160	9.5	6.5
73	3037	24-12-63	17.299	13.14	11.18	10.02	37	200	13.0	5.0
74	3038	6-6-64	3.885	6.47	5.97	5.77	22	220	5.0	5.0
75	3039	7-6-64	5.217	9.58	8.21	7.46	10	210	1.5	0
76	3040	8-6-64	6.444	7.31	6.71	6.43	18	180	5.0	5.0
77	3041	11-6-64	6.628	12.93	11.20	10.11	23	170	5.0	5.0
78	3042	15-6-64	11.663	10.20	9.41	8.90	8	260	0	0
79	3043	18-6-64	3.280	8.23	7.50	7.06	4	320	3.0	5.0
80	3044	19-6-64	2.462	9.36	7.76	7.09	14	40	5.0	5.0
81	3045	21-6-64	3.730	8.66	7.75	7.28	22	80	9.5	8.5
82	3046	22-6-64	3.222	8.38	7.38	6.92	14	40	6.5	6.5
83	3047	28-6-64	6.051	7.86	7.15	6.81	7	20	0	0
84	6001	1-7-64	6.125	5.92	5.60	5.46	22	60	6.5	6.5
85	3048	2-7-64	6.258	6.23	5.81	5.62	22	60	5.0	8.5
86	3049	3-7-64	5.264	9.03	8.11	7.60	19	60	1.5	8.5
87	7007	27-2-67	13.674	8.19	7.19	6.75	27	230	9.5	8.5
88	7006	28-2-67	13.746	10.10	8.91	8.28	20	240	6.5	8.5
89	7005	2-3-67	12.335	11.27	9.89	9.04	9	80	1.5	5.0
90	7004	3-3-67	11.298	11.77	10.87	10.26	9	150	1.5	5.0
91	7003	4-3-67	7.144	10.08	9.00	8.44	11	260	1.5	5.0
92	7002	8-3-67	20.199	8.83	7.79	7.28	37	330	13.0	10.5
93	7001	9-3-67	16.558	10.21	9.13	8.45	25	250	6.5	8.5

III. SPECTRAL ANALYSIS OF WAVE DATA

The analysis was accomplished in essentially three steps:

1) The records were digitized and recorded on magnetic tape.
2) The digital tape was loaded on a time-sharing system and a raw estimate of the power spectrum was calculated.
3) This raw estimate was corrected for the effects of white noise and then was multiplied by a calibration factor for the particular ship in order to obtain the spectrum.

The procedure closely followed that described in (1) in analyzing the 323 Station 'India' records.

The first step was to digitize the records by using a Noratron Manual Curve follower, a 12-bit analog-to-digital converter and a real-time clock connected to a PDP-8E mini-computer. The analog output of the curve follower was sampled at a rate of 0.205 seconds, corresponding to a ship sampling rate of 0.3059 seconds. A total of 2073 data points were taken for each 12-minute record. These points were recorded on digital magnetic tape.

A raw estimate of the power spectrum was obtained using the procedure given by Bendat and Piersol (2). The following steps were taken:

1) The data sequence was truncated to 2048 data points. (The first 20 points were ignored, and the last five, to allow for start-up and shut-down error).
2) Linear trends were removed by a least-squares procedure.
3) The data sequence was multiplied by a cosine taper data window.
4) The Fourier coefficients were computed using a Fast Fourier Transform technique.
5) The spectrum was computed and scaled.
6) The cosine taper data window was compensated for by multiplying this estimate by 1/0.875.
7) The resulting spectrum was truncated below a selected cut-off frequency, in order to remove the effect of low-frequency rumble in the shipboard recorder, as suggested in (1).
8) This spectrum was then smoothed by taking an average of 11 frequency components centered at a frequency spacing of 0.05 radians/second. This gave 40 spectral estimates, from 0 to 2.0 radians/second.

The last step in this analysis involved the last seven freuency components which were smoothed using a three-point average of 0.25, 0.5, 0.25. The smoothed last seven points were then averaged to obtain an estimate of white noise. This estimate was subtracted from the spectral estimate (negative numbers being set to zero) to obtain a new estimate of the power spectrum, S1. This estimate was then multiplied by a calibration factor for each individual ship to obtain the final spectrum, S2. Various spectral parameters were then calculated, using the following formulas:

$$\text{Variance} = \int_0^2 S2\ (\omega)\ d\omega = \sigma^2 = m_o$$

$$\text{Sig. Wave Height, } H_{1/3} = 2.83\ \sqrt{2\sigma^2} = 4\ \sqrt{m_o}$$

$$T_{-1} = \frac{2\pi\ m_{-1}}{m_o} \qquad \text{(energy averaged period)}$$

$$T_1 = \frac{2\pi\ m_o}{m_1} \qquad \text{(average wave period)}$$

$$T_2 = 2\pi\left(\frac{m_o}{m_2}\right)^{1/2} \qquad \text{(average zero-crossing period)}$$

where

$$m_n = \int_0^2 \omega^n\ S2(\omega)\ d\omega$$

The spectral analysis by the method described was compared to that done by the National Research Council (Canada), Marine Dynamics and Ship Laboratory, by using wave record 303 (8 December 1966) from Station 'India'. The comparison of significant wave height ($H_{1/3}$), the mean average period, T_1, the zero crossing period, T_2, and the energy-averaged period, T_{-1}, are tabulated in Figure 1. The percentage differences between the NRC and Webb results are:

$H_{1/3}$	- 4.97 %
T_1	+ 1.31 %
T_2	+ 1.28 %
T_{-1}	- 1.17 %

The + and - refer to the deviation of the Webb results from that of NRC, which is considered to be the base value.

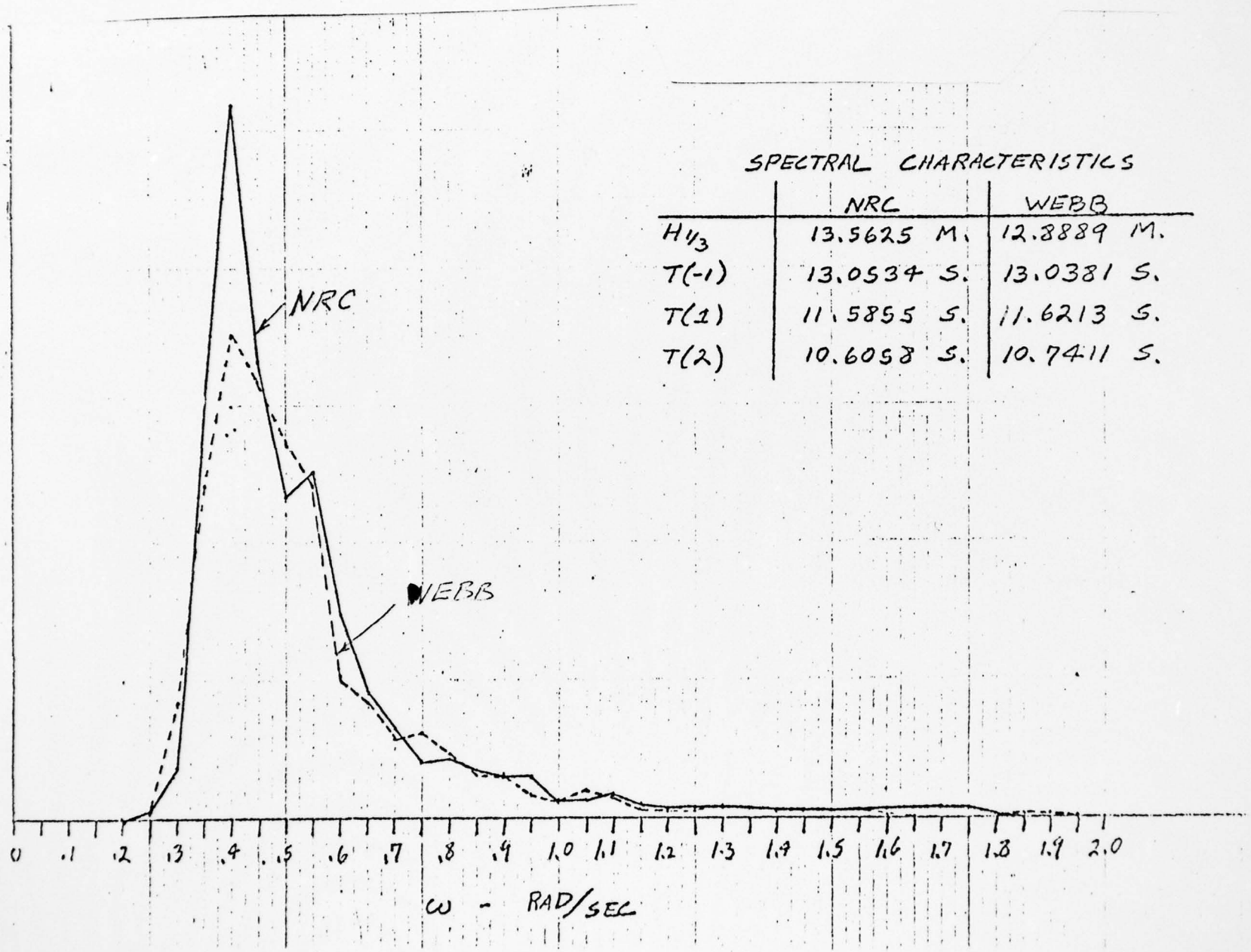

Figure 1. Comparison of Spectra -- Record NW 303 (Station 'India')

IV. CORRELATION ANALYSIS

The most significant surface log parameters have been found to be the wind speed and observed wave height, which along with the calculated mean average wave period, T_1, and wave height, usually expressed as the significant wave height ($H_{1/3}$), or the mean of the one-third highest peak-to-trough excursions in a sample, make up the basic components of the correlation analysis. Also important in such an analysis are the frequency, ω_o, at which the spectral ordinate is a maximum and the wave slope parameter, K, which is defined by:

$$\frac{\lambda_o}{H_{1/3}} = 39.2\ K^2$$

where 39.2 is a constant and

$$\lambda_o = \frac{g}{2\pi} T = \frac{g}{\omega_o}$$

The correlation of wind speed and significant wave height, as shown in Figure 2, is the most basic relation and has the most potential value since it is the most often used method of describing wave generation. Although the trends in the plot are relatively consistent, there is a scarcity of data in the plot for the larger wave heights higher and wind speeds.

The relationship of observed wave height (H_V), and significant wave height ($H_{1/3}$) is shown in Figure 3. Unfortunately, there is no data for the larger wave heights and thus a significant trend cannot be established over a full range of values as has been done in the analysis of data from Station 'India' (1) and Station 'Papa' (3). The basic assumption that $H_V = H_{1/3}$ is also shown, and the deviation of the data about it can be readily determined. The trend of underestimating the observed height at the lower wave heights which was discussed in (4) is clearly indicated in this limited sample. The standard deviation is also shown, indicating the typical scatter of significant wave height over the range investigated.

The relationship between the significant wave height and the mean average wave period, T_1, is shown in Figure 4. The sorting was accomplished on the basis of wave band periods of one second, and a range of 6.5 to 11.5 seconds is adequately covered, with an increase in wave height with period as expected.

However, data above 10 seconds may be inadequate and are not necessarily correct.

The relationship between ω_o, the frequency at the maximum spectral ordinate, and T_1, the mean average period, is shown in Figure 5. It is of special interest since it can be compared with the standard spectral formulation through a simple relation between ω_o and T_1, as shown below:

$$\omega_o = \frac{4.34}{T_1}$$

The actual data do not compare well against the theoretical line, and this indicates the inadequacy of such mathematical spectral formulations for describing the possible wave spectra over an entire range of wave heights and periods. Figure 5 indicates a fairly good agreement in the range of T_1 between 7.5-10 seconds, or a peak frequency range of 0.45-0.65 radians/second. Outside this, the error is substantial, particularly in the lower periods. The trend shown is similar to that obtained from Station 'India' (1) and Station 'Papa' (3).

The last correlation is between K_1^* and $H_{1/3}$ as shown in Figure 6. The trend obtained is that previously illustrated from other spectral data, such as 'India' (1) and 'Papa' (3).

Tables II-VI illustrate some of the actual values used in plotting Figures 2-6 as obtained from the computer analysis. The number of samples in each group is shown in order to indicate the reliability of the data.

Tables VII and VIII were not illustrated graphically, and they represent the seasonal variation and the directional variation, respectively, of the wave height.

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*Defined by:

$$\frac{\lambda_1}{H_{1/3}} = 39.2\ K_1^2$$

where λ_1 is the length of a wave having period T_1.

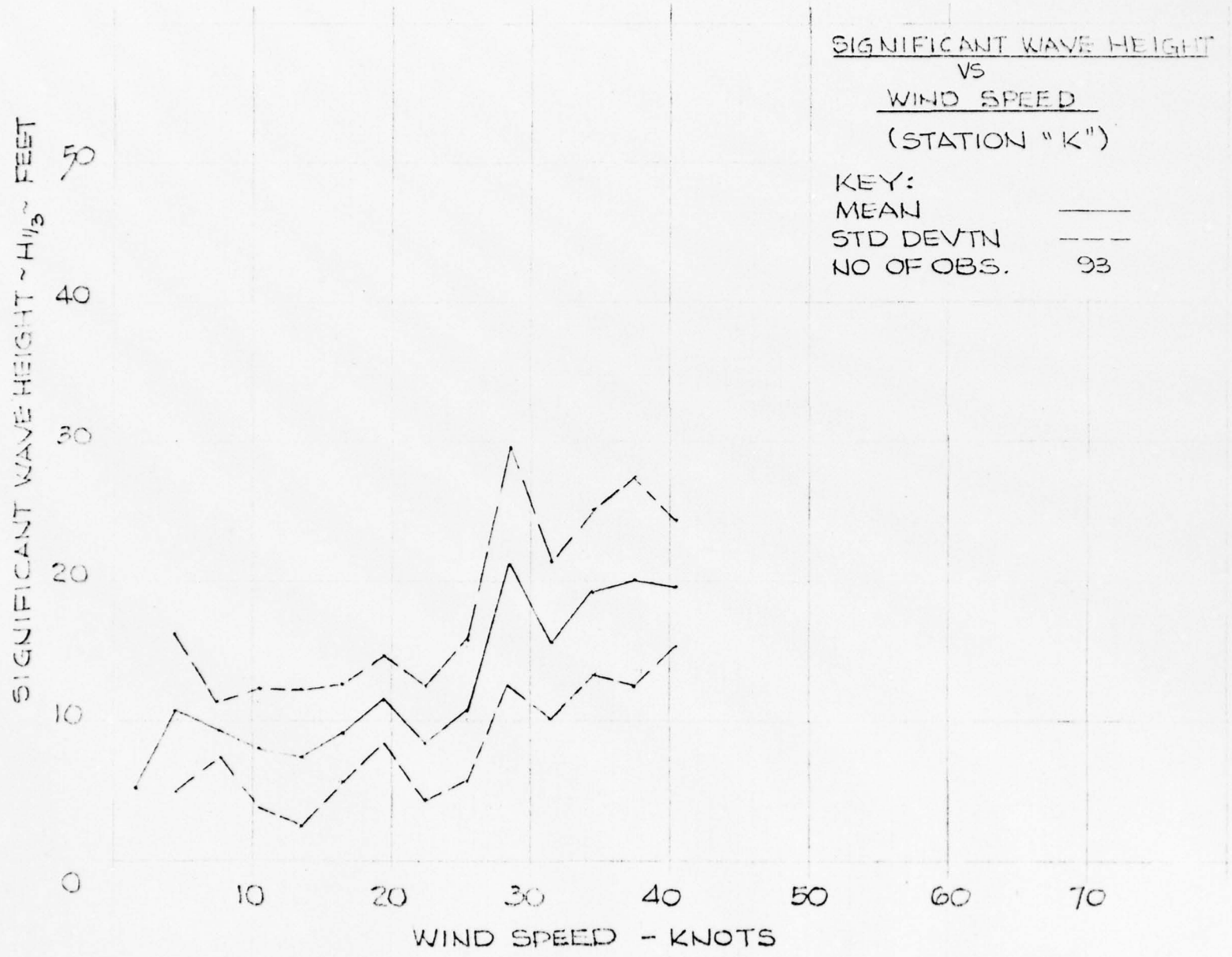

Figure 2. Significant Wave Height vs. Wind Speed

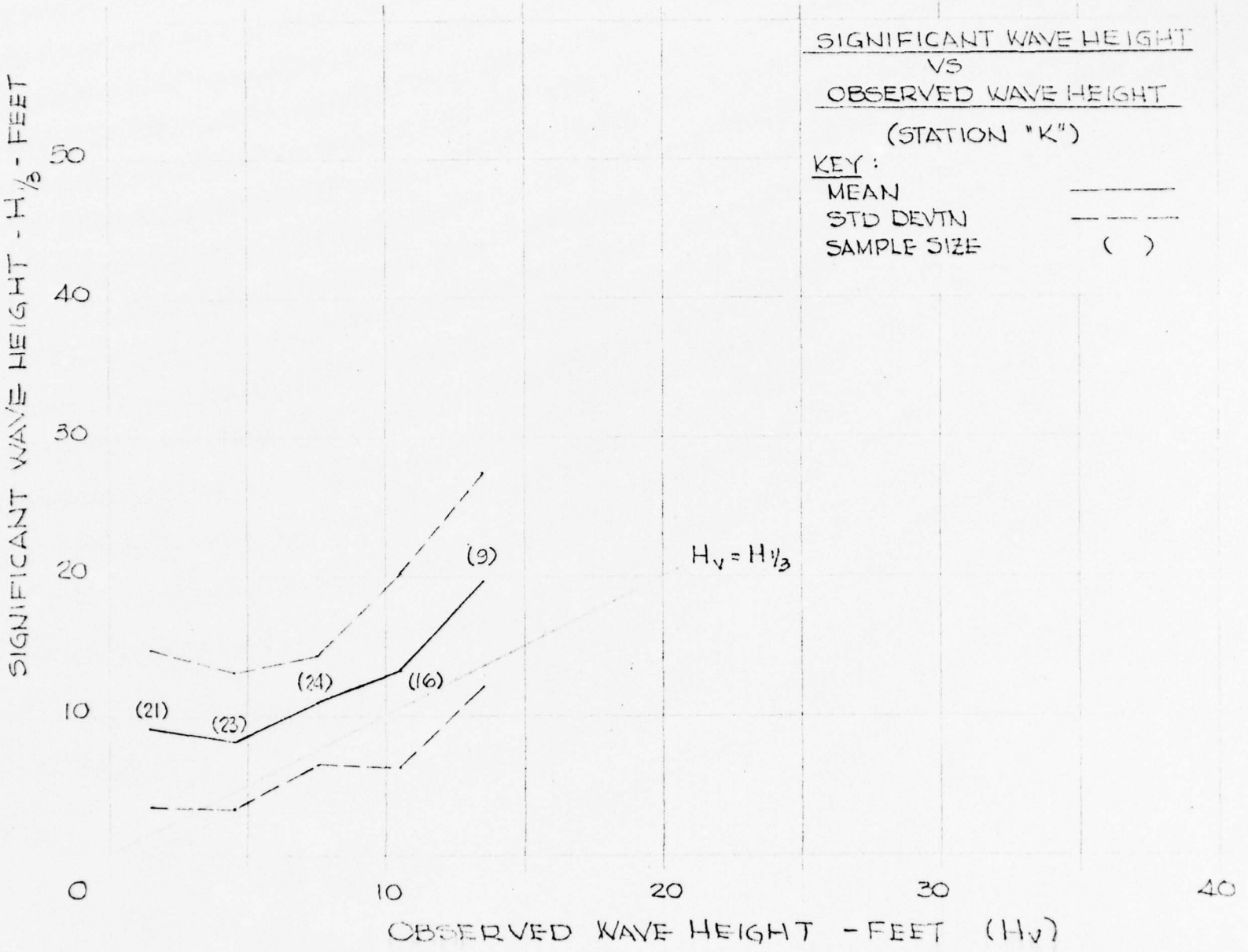

Figure 3. Significant Wave Height vs. Observed Wave Height

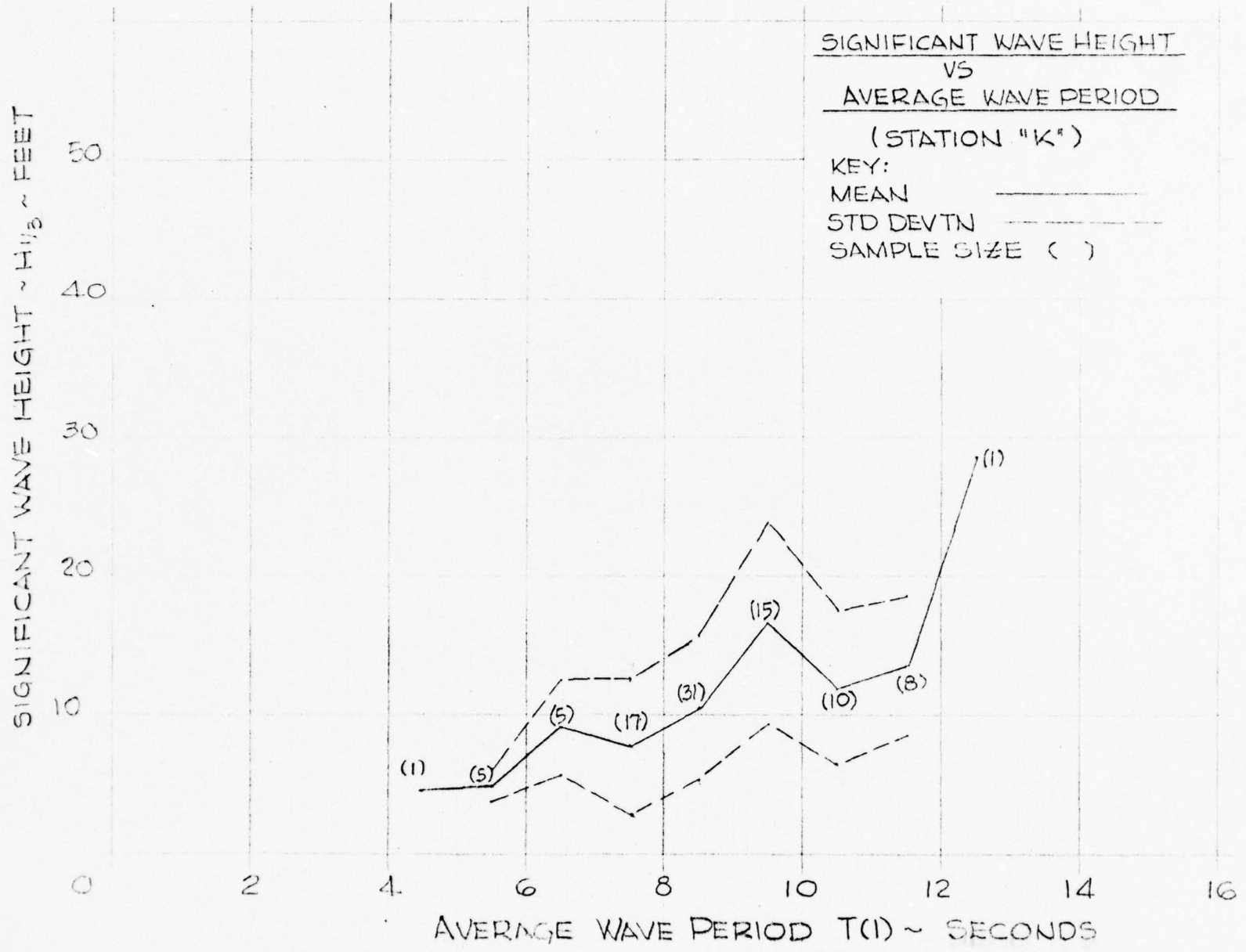

Figure 4. Significant Wave Height vs. Average Wave Period

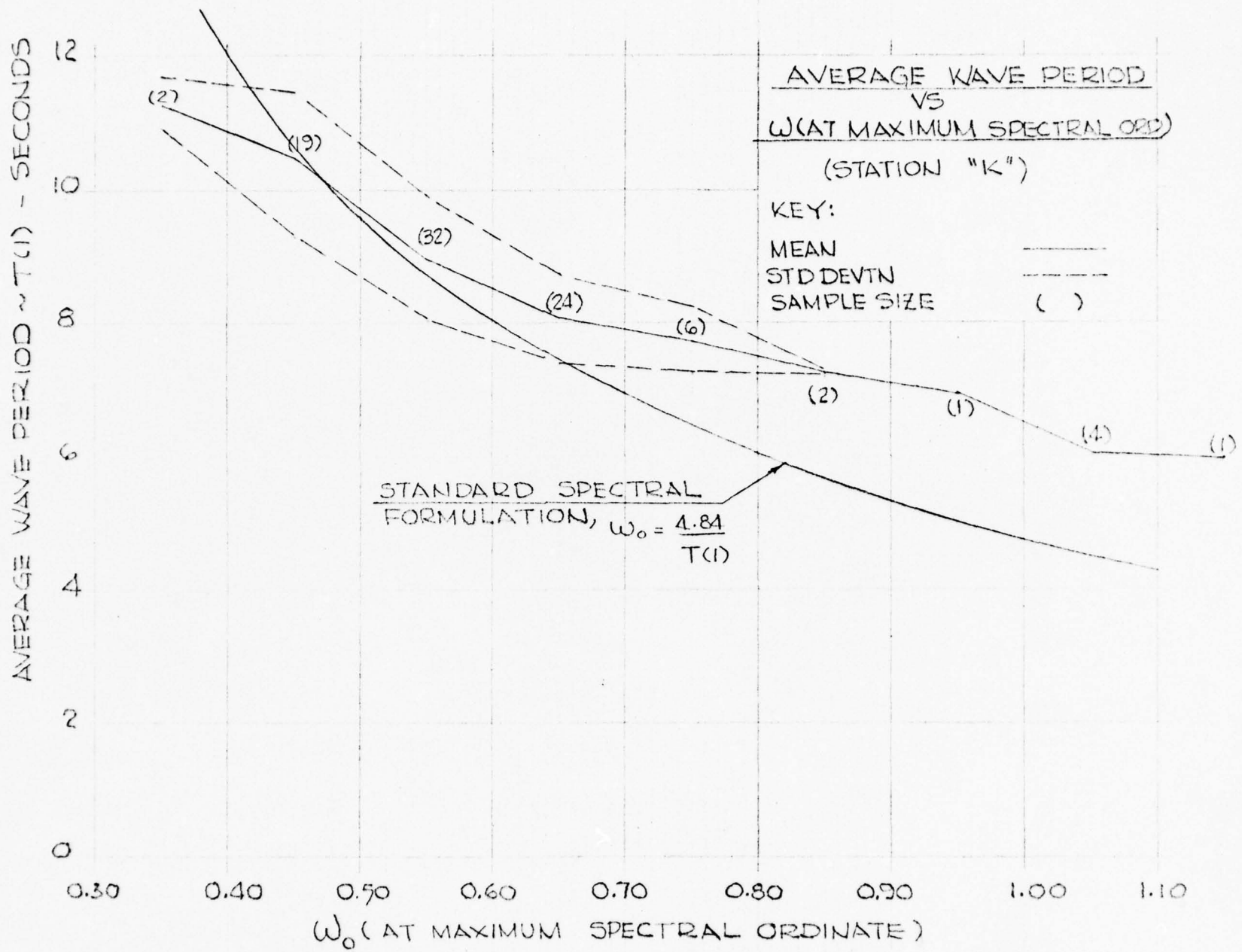

Figure 5. Average Wave Period vs. Spectral Peak Frequency

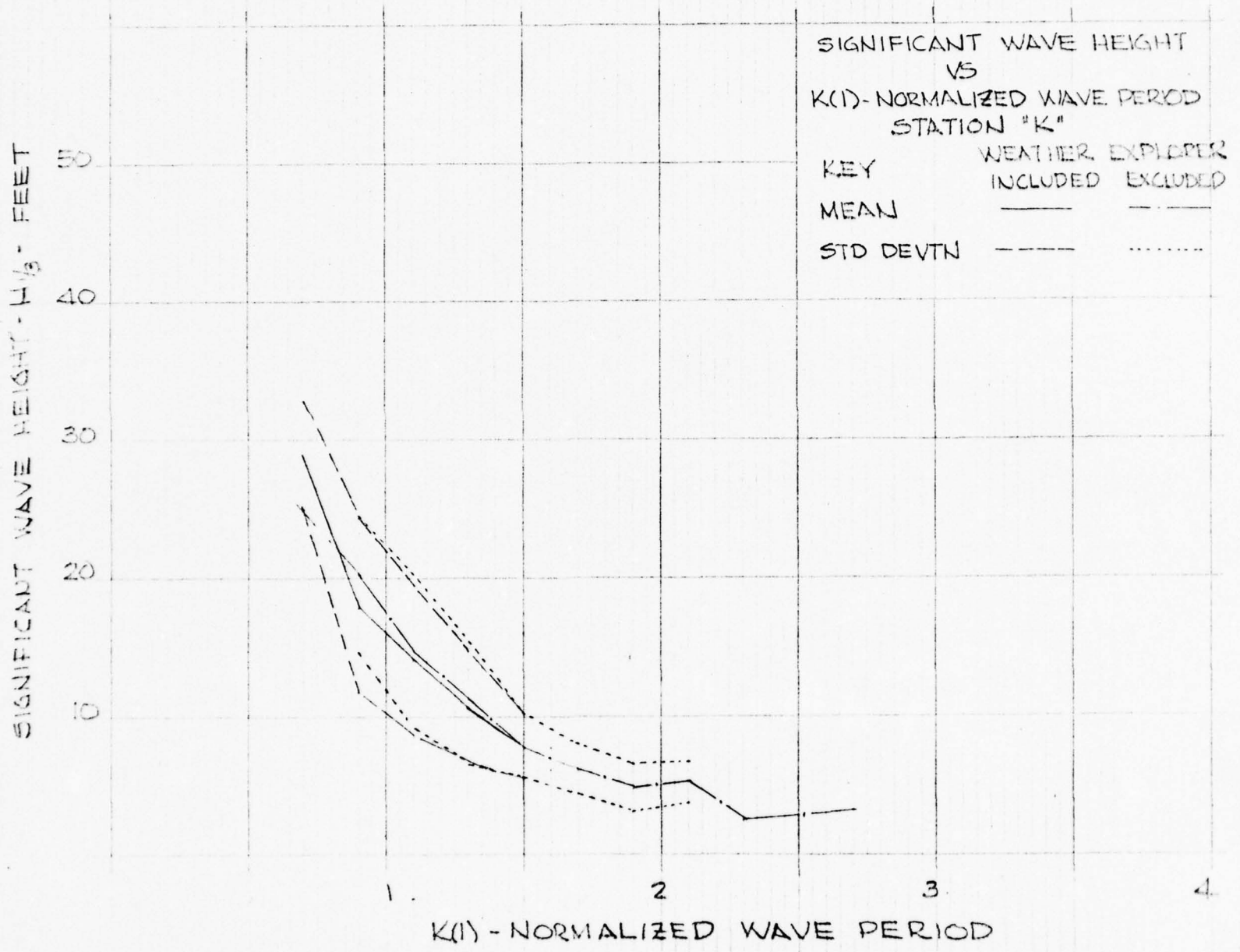

Figure 6. Significant Wave Height vs. Normalized Wave Period

Table II

Significant Wave Height vs. Wind Speed

ALL SEASON

WIND SPEED BAND WIDTH		MEAN VALUE	H(1/3) STANDARD DEV.	SAMPLE SIZE
0.00-	3.00	5.22	0.000	1
3.00-	6.00	10.80	5.837	6
6.00-	9.00	9.33	2.106	10
9.00-	12.00	7.98	4.182	8
12.00-	15.00	7.32	4.916	12
15.00-	18.01	9.20	3.470	11
18.01-	21.01	11.56	3.290	5
21.01-	24.01	8.34	4.127	12
24.01-	27.01	10.83	5.059	8
27.01-	30.01	21.08	8.557	2
30.01-	33.01	15.73	5.707	2
33.01-	36.01	19.15	5.912	4
36.01-	39.01	20.01	7.514	8
39.01-	42.01	19.69	4.531	3
42.01-	45.01	0.00	0.000	0
45.01-	48.02	0.00	0.000	0
48.02-	51.02	0.00	0.000	0
51.02-	54.02	0.00	0.000	0
54.02-	57.02	0.00	0.000	0
57.02-	60.02	0.00	0.000	0
60.02-	63.02	0.00	0.000	0
63.02-	66.02	0.00	0.000	0
66.02-	69.02	0.00	0.000	0
69.02-	72.02	6.56	0.000	1

Table III

Significant vs. Observed Wave Heights

OBSERVED HEIGHT BAND WIDTH	SIGNIFICANT HEIGHT MEAN VALUE	STD. DEVIATION	SAMPLE SIZE
< 3.0	9.2	5.6	21
3- 6	8.2	4.9	23
6- 9	11.0	3.3	24
9-12	13.1	7.1	16
12-16	19.7	7.6	9
16-21	--	--	--

Table IV

Significant Wave Height vs. Wave Period

ALL SEASON

PERIOD-T1 BAND WIDTH		H(1/3) MEAN VALUE	STANDARD DEV.	SAMPLE SIZE
0.00-	1.00	0.00	0.000	0
1.00-	2.00	0.00	0.000	0
2.00-	3.00	0.00	0.000	0
3.00-	4.00	0.00	0.000	0
4.00-	5.00	4.64	0.000	1
5.00-	6.00	4.97	1.100	5
6.00-	7.00	9.10	3.443	5
7.00-	8.00	7.79	4.825	17
8.00-	9.00	10.44	5.360	31
9.00-	10.00	16.55	7.254	15
10.00-	11.00	11.97	5.707	10
11.00-	12.00	13.48	5.086	8
12.00-	13.00	29.63	0.001	1

Table V

Average Wave Period vs. Spectral Peak Frequency

ALL SEASON

OMEGA BAND WIDTH		MEAN VALUE	PERIOD-T1 STANDARD DEV.	SAMPLE SIZE
0.00-	0.10	0.00	0.000	0
0.10-	0.20	0.00	0.000	0
0.20-	0.30	0.00	0.000	0
0.30-	0.40	11.31	0.415	2
0.40-	0.50	10.43	1.098	19
0.50-	0.60	8.96	0.924	32
0.60-	0.70	8.09	0.689	24
0.70-	0.80	7.74	0.516	6
0.80-	0.90	7.26	0.067	2
0.90-	1.00	6.95	0.000	1
1.00-	1.10	6.02	0.419	4
1.10-	1.20	5.97	0.000	1
1.20-	1.30	0.00	0.000	0
1.30-	1.40	0.00	0.000	0
1.40-	1.50	4.87	0.329	2

Table VI

Significant Wave Height vs. Normalized Wave Period

ALL SEASON
(WEATHER EXPLORER INCLUDED)

K(1) BAND WIDTH		MEAN VALUE	H(1/3) STANDARD DEV.	SAMPLE SIZE
0.00-	0.20	0.00	0.000	0
0.20-	0.40	0.00	0.000	0
0.40-	0.60	0.00	0.000	0
0.60-	0.80	28.93	3.972	2
0.80-	1.00	17.88	6.248	12
1.00-	1.20	14.08	5.500	21
1.20-	1.40	10.83	4.168	24
1.40-	1.60	7.87	2.328	12
1.60-	1.80	6.15	1.715	8
1.80-	2.00	4.79	1.716	9
2.00-	2.20	5.35	1.468	3
2.20-	2.40	2.46	0.000	1
2.40-	2.60	0.00	0.000	0
2.60-	2.80	3.18	0.000	1

DATA OUTSIDE RANGE
0

Table VII

Significant Wave Height vs. Season

X
WITH WEATHER EXPLORER

MONTH BAND WIDTH		MEAN VALUE	H(1/3) STANDARD DEV.	SAMPLE SIZE
0.00-	3.00	15.94	6.381	19
3.00-	6.00	7.90	5.174	29
6.00-	9.00	5.62	2.148	19
9.00-	12.00	14.57	5.856	26

DATA OUTSIDE RANGE
0

Table VIII

Significant Wave Height vs. Predominant Wave Direction

ALL SEASON

WAVE DIRECT BAND WIDTH	MEAN VALUE	H(1/3) STANDARD DEV.	SAMPLE SIZE
0.00- 30.00	8.49	4.229	9
30.00- 60.00	9.97	3.729	9
60.00- 90.00	9.43	7.028	8
90.00- 120.00	13.29	6.674	4
120.00- 150.00	17.07	0.001	1
150.00- 180.00	7.80	2.579	6
180.00- 210.00	9.32	4.087	8
210.00- 240.00	8.69	3.616	5
240.00- 270.00	9.88	4.735	8
270.00- 300.00	14.48	6.833	9
300.00- 330.00	10.67	5.967	14
330.00- 360.00	11.88	6.181	7

V. ANALYSIS OF RECORDS CHARACTERISTICS

A manual analysis of the wave strip charts was performed in accordance with the procedure described by Hoffman in (6) and in accordance with a method suggested by Draper (7). For each record, a 720-second period was selected and where the record's length was shorter than 12 minutes, the full use of the wave strip chart was made. The number of crests (N_c) varied between 166 and 62, while the number of zero crossings (N_z) varied from 144 to 54. The maximum height (H_{max}), which is the combined sum of the highest wave crest and lowest wave trough in a given record, varied from a high of 46.70 feet to a low of 3.07 feet.

The comparison between the $H_{1/3}$ values calculated by the two methods is summarized in Table IX and shown graphically in Figure 7. The overall agreement is fairly good. Approximately 60% of the standard data is larger than that calculated from spectral analyses.

Some values of the derived $H_{1/3}$ by the measured spectral analysis were greater than the H_{max} values read from the wave records. An analysis was made of this phenomenon to determine the cause. Record 6001 from Station K was selected since it also differed some 75% from the $H_{1/3}$ using the analog digitizer. First, an analysis of extremes was made of the record in which the highest wave height in each minute of the record was recorded. The maximum height was 8.91 and the lowest was 4.11 feet with a mean of 6.20 feet. Another analysis using one-third the 15-minute recording intervals was used. This time all the wave heights were recorded and the 1/3 highest were finally selected. Then mean $H_{1/3}$ from this approach produced a mean height of 5.25 feet. This verified the digitizer results which produced a wave height of 6.13 feet. Further examination of the wave records indicated that the periods were extremely short and the frequency correction for the Tucker wave meter very high, causing the large discrepancies between the measured and digitized spectra.

Table X is a summary of the calculated parameters of the 93 spectra. Each record is designated by number and date and parameters included are as follows:

$H_{1/3}$ significant wave height $= 4\sqrt{m_o}$

T_1 mean average period $= 2\pi\, m_o/m_1$

T_{-1}	energy averaged period = $2\pi\ m_{-1}/m_o$
T_2	zero-crossing period = $2\pi\ \sqrt{m_o/m_2}$
T_4	average apparent period = $2\pi\ (m_2/m_4)^{1/2}$
HC(1/3)	$H_{1/3}$ x D
B	$m_3/m_2^{3/2}$ -- skewness
ε	$\sqrt{1 - m_2^2/m_o m_4}$ -- spectral width parameter
D	$\sqrt{1 - \varepsilon^2/2}$

where m_n is defined by

$$m_n = \int_0^\infty \omega^n \ S_\zeta(\omega) \ d\omega$$

Table IX

Comparison of Significant Heights
by Draper Estimate and by Spectrum Calculation

N	Record Number	Ship	$H_{1/3}$ (Estimated)	$H_{1/3}$ (Calculated)	Percent Difference
1	2001	Explorer	4.32	3.990	+ 8.27
2	6006		8.23	7.524	+ 9.30
3	2002		5.61	6.171	- 9.08
4	2003		10.59	10.875	- 2.62
5	2004		8.24	8.283	- 0.52
6	2005		4.92	5.497	-10.50
7	2006		7.98	8.756	- 8.86
8	2007		12.30	11.014	+11.68
9	2008		3.25	4.642	-29.99
10	2009		14.09	14.742	- 4.42
11	2010		13.87	16.411	-15.48
12	2011		15.38	16.622	- 7.47
13	5001		27.14	32.905	-17.52
14	2012		15.01	17.525	-14.35
15	2013		7.50	8.964	-16.33
16	2014	Reporter	19.71	21.436	- 8.05
17	2015		13.30	12.836	+ 3.61
18	2016		13.75	14.571	- 6.79
19	2017		8.82	8.251	+ 6.90
20	6005		10.85	14.019	-22.61
21	5002		30.61	29.635	+ 3.29
22	2018		4.69	4.640	+ 1.08
23	2019		4.76	4.399	+ 8.21
24	2020		3.54	3.298	+ 7.34
25	2021		7.35	7.759	- 5.27
26	2022		6.82	6.138	+11.11
27	6004		9.86	9.043	+ 9.03
28	2023		6.67	6.073	+ 9.83
29	2024		9.10	8.921	+ 2.01
30	2025		7.30	7.088	- 2.99
31	2026		8.35	8.052	- 1.21
32	2027		18.53	16.059	+15.39

Table IX (Cont'd)

N	Record Number	Ship	$H_{1/3}$ (Estimated)	$H_{1/3}$ (Calculated)	Percent Difference
33	2028	Reporter	12.65	10.281	+23.04
34	2029		9.36	7.388	+26.69
35	2030		9.65	7.911	+21.98
36	3001		9.31	9.168	+ 1.55
37	3002		4.18	4.506	- 7.23
38	3003		19.35	15.795	+22.51
39	3004		6.95	6.873	+ 1.12
40	3005		10.41	10.381	+ 2.79
41	3006		12.90	13.453	- 4.11
42	3007		25.39	25.588	- 0.77
43	3008		16.03	18.914	-15.25
44	3009		6.95	7.795	-10.84
45	3010		6.12	6.582	- 6.74
46	6003		11.61	11.295	+ 2.79
47	3011		4.76	4.970	- 4.23
48	3012		5.59	5.222	+ 7.05
49	3013		3.69	3.599	+ 2.53
50	3014		3.89	3.661	+ 6.26
51	3015		3.56	3.184	+11.81
52	3016		13.36	11.316	+18.06
53	3017		7.79	10.075	-22.68
54	3018		17.53	19.072	- 8.09
55	3019		24.04	26.124	- 7.98
56	6002		10.79	9.084	+18.78
57	3020		14.06	14.202	- 1.00
58	3021		13.54	12.521	+ 8.14
59	3022		11.55	10.318	+11.98
60	3023		8.48	9.511	-10.84
61	3024		5.78	5.062	+14.18
62	3025		20.56	18.668	+10.13
63	3026		20.01	19.915	+ 0.48
64	3027		23.44	25.747	- 8.96
65	3028		24.48	22.559	+ 8.52

Table IX (Cont'd)

N	Record Number	Ship	$H_{1/3}$ (Estimated)	$H_{1/3}$ (Calculated)	Percent Difference
66	3030	Reporter	20.73	24.961	-16.95
67	3031		23.13	17.074	+35.47
68	3032		20.35	18.455	+10.27
69	3033		12.11	12.756	- 5.06
70	3034		10.68	11.341	- 5.83
71	3035		13.89	12.206	+13.80
72	3036		10.69	10.022	+ 6.67
73	3037		19.86	17.299	+14.80
74	3038		5.92	3.885	+52.38
75	3039		5.93	5.217	+13.67
76	3040		8.19	6.444	+27.09
77	3041		6.84	6.628	+ 3.20
78	3042		13.62	11.663	+16.78
79	3043		3.65	3.280	+11.28
80	3044		2.25	2.462	- 8.61
81	3045		4.96	3.730	+32.98
82	3046		3.77	3.222	+17.01
83	3047		7.75	6.051	+28.08
84	6001		10.76	6.125	+75.67
85	3048		8.89	6.258	+42.06
86	3049		5.24	5.264	- 0.46
87	7007		16.50	13,674	+20.67
88	7006		15.87	13.746	+15.45
89	7005		13.01	12.335	+ 5.47
90	7004		12.08	11.298	+ 6.92
91	7003		8.63	7.144	+20.80
92	7002		23.69	20.199	+17.28
93	7001		19.31	16.558	+16.41

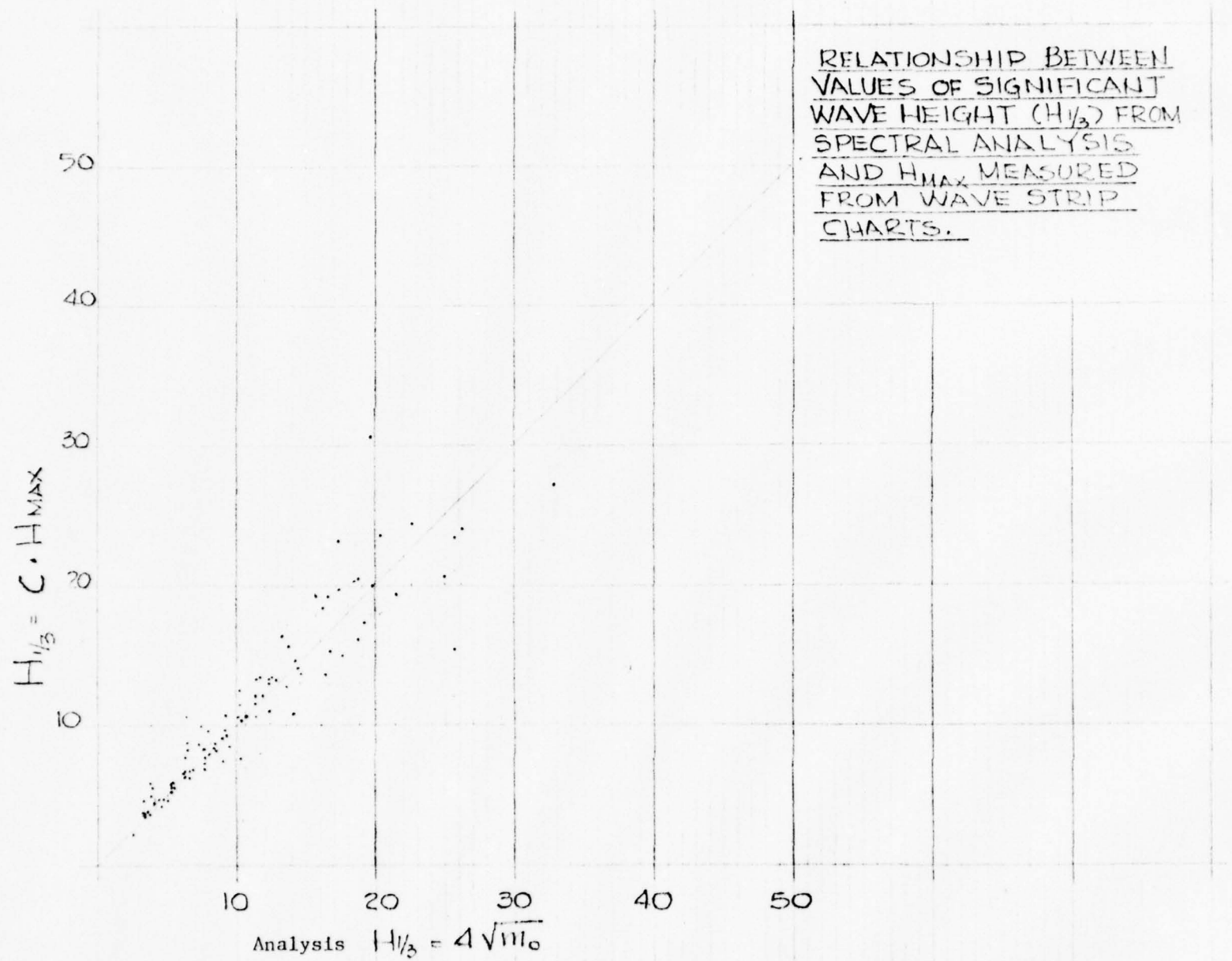

Figure 7. Relationship Between Significant Wave Heights from Spectral Analysis and from Maxima in Records

Table X

Calculated Parameters of Spectra

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RECORD NO.	1	2	3	4	5	6
DATE	9/ 4/55	9/ 5/55	9/ 6/55	9/ 9/55	9/12/55	9/16/55
H(1/3)	3.9901	7.5241	6.1713	10.8749	8.2827	5.4965
PERIOD-T1	7.7273	6.3589	8.9053	8.7608	7.6838	6.7928
PERIOD-T-1	8.8629	7.3045	10.0753	10.4865	8.9532	7.4443
PERIOD-T2	7.1754	6.0022	8.2092	7.7788	7.1009	6.4625
PERIOD-T4	5.4184	4.9800	5.7612	5.0379	5.3933	5.3149
-MOM-M(-1)	1.4036	4.1135	3.8169	12.3362	6.1097	2.2371
0TH MOM-M0	1.8156	1.0880	1.6825	1.2469	1.2531	1.3599
1ST MOM-M1	0.8091	3.4962	1.6794	5.3011	3.5061	1.7465
2ND MOM-M2	0.7630	3.8773	1.3944	4.8224	3.3570	1.7848
3RD MOM-M3	0.8314	4.7173	1.3947	5.5349	3.6989	2.0159
4TH MOM-M4	1.0260	6.1722	1.6586	7.5012	4.5563	2.4944
HC(1/3)	3.5355	6.9132	5.3311	9.1615	7.3545	5.0321
B	1.2474	0.6179	0.8470	0.5227	0.6014	0.8454
E	0.6556	0.5582	0.7124	0.7619	0.6505	0.5689
D	0.8861	0.9188	0.8639	0.8424	0.8879	0.9155

RECORD NO.	7	8	9	10	11	12
DATE	9/17/55	9/23/55	9/26/55	3/ 9/56	3/12/56	3/13/56
H(1/3)	8.7558	11.0144	4.6415	14.7416	16.4112	16.6215
PERIOD-T1	8.6791	8.9715	4.5426	6.9657	11.5628	8.0726
PERIOD-T-1	10.0440	10.2715	4.7123	8.4419	13.5288	9.2795
PERIOD-T2	7.9342	8.2261	4.4903	6.3605	10.2362	7.4058
PERIOD-T4	5.5958	5.8086	4.3392	4.8479	6.0717	5.2417
-MOM-M(-1)	7.6595	12.3953	1.0098	18.2487	36.2443	25.5014
0TH MOM-M0	1.3766	1.2687	0.9896	0.8515	1.3396	0.9293
1ST MOM-M1	3.4688	5.3103	1.8624	12.2515	9.1469	13.4396
2ND MOM-M2	3.0049	4.4236	2.6363	13.2539	6.3422	12.4291
3RD MOM-M3	3.1261	4.4257	3.7935	16.4336	5.8431	13.7767
4TH MOM-M4	3.7884	5.1759	5.5275	22.2637	6.7917	17.8589
HC(1/3)	7.5762	9.5343	4.5640	13.1065	13.4923	14.3992
B	0.6002	0.4757	0.8862	0.3406	0.3658	0.3144
E	0.7089	0.7081	0.2572	0.6474	0.8051	0.7064
D	0.8653	0.8656	0.9833	0.8891	0.8221	0.8663

RECORD NO.	13	14	15	16	17	18
DATE	3/21/56	3/24/56	3/26/56	3/11/59	3/12/59	3/23/59
H(1/3)	32.9054	17.5247	8.9642	21.4355	12.8362	14.5705
PERIOD-T1	9.1657	8.2882	7.2777	10.3709	11.1293	9.2556
PERIOD-T-1	11.2334	9.3022	8.2457	12.0814	12.3293	10.5711
PERIOD-T2	8.0987	7.7575	6.8086	9.4015	10.2969	8.5980
PERIOD-T4	5.2443	5.8698	5.3406	6.2939	6.9680	6.4299
-MOM-M(-1)	120.9886	28.4177	6.5910	55.2184	20.2074	22.3240
0TH MOM-M0	0.7499	0.9292	1.1408	1.0513	1.4579	1.1380
1ST MOM-M1	46.3906	14.5513	4.3360	17.3983	5.8138	9.0075
2ND MOM-M2	40.7329	12.5920	4.2771	12.8265	3.8344	7.0859
3RD MOM-M3	44.9344	12.5712	4.7803	11.6743	3.1074	6.4719
4TH MOM-M4	58.4698	14.4281	5.9201	12.7829	3.1178	6.7661
HC(1/3)	27.7199	15.5395	8.0560	18.2401	10.9594	12.8653
B	0.1728	0.2813	0.5404	0.2541	0.4139	0.3431
E	0.7620	0.6538	0.6203	0.7429	0.7363	0.6639
D	0.8424	0.8867	0.8987	0.8509	0.8538	0.8830

Table X (Cont'd)

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RECORD NO.	19	20	21	22	23	24
DATE	3/26/59	3/28/59	3/29/59	9/17/59	9/19/59	9/20/59
H(1/3)	8.2511	14.0189	29.6350	4.6404	4.3988	3.2982
PERIOD-T1	8.8338	10.5323	12.3558	7.8225	7.4649	8.2527
PERIOD-T-1	9.7485	11.8684	14.1643	8.8999	8.3413	9.1640
PERIOD-T2	8.2657	9.6144	11.1925	7.2906	7.0639	7.8092
PERIOD-T4	6.1218	6.3211	7.0576	5.5313	5.7930	6.1857
-MOM-M(-1)	6.6018	23.2036	123.7384	1.9063	1.6054	0.9916
0TH MOM-M0	1.4434	1.3202	1.0653	1.7043	1.6705	2.1328
1ST MOM-M1	3.0265	7.3276	27.9124	1.0810	1.0179	0.5176
2ND MOM-M2	2.4587	5.2459	17.2980	0.9996	0.9568	0.4401
3RD MOM-M3	2.3368	4.7039	13.7007	1.0649	0.9945	0.4211
4TH MOM-M4	2.5900	5.1831	13.7102	1.2898	1.1256	0.4541
HC(1/3)	7.2603	11.8634	24.7732	4.1187	4.0226	2.9752
B	0.6061	0.3915	0.1904	1.0656	1.0627	1.4420
E	0.6719	0.7535	0.7761	0.6515	0.5723	0.6104
D	0.8799	0.8462	0.8359	0.8876	0.9145	0.9021

RECORD NO.	25	26	27	28	29	30
DATE	9/21/59	9/23/59	9/26/59	9/27/59	10/ 1/59	10/ 2/59
H(1/3)	7.7594	6.1381	9.0432	6.0732	8.9208	7.0880
PERIOD-T1	11.0481	10.7031	10.1445	8.9096	7.4578	8.1638
PERIOD-T-1	11.9835	11.8247	11.1125	9.9659	8.3337	8.9535
PERIOD-T2	10.3690	9.9733	9.5116	8.3204	6.9982	7.7447
PERIOD-T4	7.3586	7.0106	6.9173	6.2044	5.4436	6.2199
-MOM-M(-1)	7.1770	4.4315	9.0398	3.6564	6.5969	4.4745
0TH MOM-M0	1.8615	2.0276	1.5833	1.6968	1.1719	1.4392
1ST MOM-M1	2.1401	1.3823	3.1658	1.6257	4.1904	2.4167
2ND MOM-M2	1.3817	0.9346	2.2304	1.3146	4.0094	2.0667
3RD MOM-M3	1.0668	0.7588	1.8534	1.2376	4.3689	1.9778
4TH MOM-M4	1.0074	0.7507	1.8402	1.3482	5.3414	2.1090
HC(1/3)	6.7280	5.3053	7.9067	5.3569	7.9916	6.4282
B	0.6568	0.8399	0.5564	0.8211	0.5442	0.6657
E	0.7045	0.7113	0.6864	0.6663	0.6284	0.5958
D	0.8671	0.8643	0.8743	0.8821	0.8958	0.9069

RECORD NO.	31	32	33	34	35	36
DATE	10/ 3/59	10/ 5/59	4/ 4/60	4/11/60	4/13/60	4/ 1/63
H(1/3)	8.4515	16.0594	10.2812	7.3883	7.9110	9.1675
PERIOD-T1	9.3745	8.6821	9.1214	10.0987	11.0269	7.9544
PERIOD-T-1	10.4614	9.8073	10.0264	11.0956	12.0519	9.0821
PERIOD-T2	8.7313	8.0915	8.5591	9.5127	10.3106	7.3959
PERIOD-T4	6.3665	6.0713	6.3182	7.1000	7.2008	5.6207
-MOM-M(-1)	7.4328	25.1598	10.5422	6.0247	7.5028	7.5925
0TH MOM-M0	1.5135	1.0168	1.3351	1.7437	1.8400	1.2330
1ST MOM-M1	2.9921	11.6652	4.5508	2.1226	2.2288	4.1491
2ND MOM-M2	2.3118	9.7193	3.5602	1.4884	1.4526	3.7910
3RD MOM-M3	2.1057	9.3930	3.2603	1.2110	1.1406	3.9886
4TH MOM-M4	2.2516	10.4097	3.5209	1.1656	1.1059	4.7374
HC(1/3)	7.3961	14.1968	9.0361	6.5190	6.8231	8.1419
B	0.5991	0.3100	0.4853	0.6669	0.6516	0.5404
E	0.6843	0.6611	0.6746	0.6655	0.7157	0.6499
D	0.8751	0.8840	0.8789	0.8823	0.8625	0.8881

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RECORD NO.	37	38	39	40	41	42
DATE	4/ 3/63	4/ 7/63	4/ 8/63	4/14/63	4/17/63	4/20/63
H(1/3)	4.5058	15.7948	6.8727	10.3811	13.4534	25.5882
PERIOD-T1	8.1921	7.1795	8.0048	7.8591	9.2273	9.8000
PERIOD-T-1	9.3614	7.9424	8.8914	9.1071	10.2357	11.2823
PERIOD-T2	7.6333	6.7746	7.5037	7.2949	8.6015	8.8864
PERIOD-T4	5.7815	5.3473	5.7506	5.5638	6.2109	5.7849
-MOM-M(-1)	1.8905	19.7096	4.1776	9.7626	18.4282	73.4815
0TH MOM-M0	1.8113	0.8479	1.4331	1.1448	1.1807	0.9093
1ST MOM-M1	0.9732	13.6456	2.3172	5.3848	7.7028	26.2370
2ND MOM-M2	0.8597	13.4121	2.0699	4.9967	6.0361	20.4584
3RD MOM-M3	0.8756	14.8997	2.1243	5.3256	5.6041	20.0305
4TH MOM-M4	1.0154	18.5179	2.4711	6.3725	6.1774	24.1345
HC(1/3)	3.9968	14.2285	6.1227	9.2319	11.7338	21.5897
B	1.0985	0.3033	0.7134	0.4768	0.3779	0.2165
E	0.6530	0.6140	0.6424	0.6468	0.6918	0.7591
D	0.8870	0.9008	0.8909	0.8893	0.8722	0.8437

RECORD NO.	43	44	45	46	47	48
DATE	4/22/63	5/25/63	5/29/63	6/ 1/63	6/ 7/63	6/ 9/63
H(1/3)	18.9138	7.7947	6.5619	11.2945	4.9697	5.2217
PERIOD-T1	9.5004	8.5884	8.2494	8.8970	5.9543	7.3288
PERIOD-T-1	10.7385	9.4267	9.5481	10.3877	6.4332	7.8652
PERIOD-T2	8.7674	8.1183	7.5760	8.1129	5.7274	7.0577
PERIOD-T4	6.2427	6.3463	5.5447	5.6933	4.9489	5.9657
-MOM-M(-1)	38.2120	5.6972	4.0895	13.1812	1.5805	2.1332
0TH MOM-M0	1.0253	1.4438	1.5115	1.2425	1.2536	1.5053
1ST MOM-M1	14.7867	2.7781	2.0497	5.6305	1.6289	1.4610
2ND MOM-M2	11.4830	2.2746	1.8510	4.7821	1.8577	1.3506
3RD MOM-M3	10.6584	2.1140	1.9667	4.8865	2.2817	1.3582
4TH MOM-M4	11.6325	2.2296	2.3769	5.8245	2.9945	1.4982
HC(1/3)	16.4179	6.9959	5.7499	9.7567	4.6442	4.8346
B	0.2739	0.6163	0.7810	0.4673	0.9011	0.8653
E	0.7021	0.6236	0.6814	0.7124	0.5034	0.5343
D	0.8680	0.8975	0.8763	0.8638	0.9345	0.9259

RECORD NO.	49	50	51	52	53	54
DATE	6/10/63	6/13/63	6/15/63	11/28/63	11/29/63	11/30/63
H(1/3)	3.5986	3.6606	3.1837	11.3157	10.0747	19.0718
PERIOD-T1	5.2003	8.0975	10.5871	6.9481	8.1014	11.7282
PERIOD-T-1	5.8998	9.0248	11.6563	7.7035	8.8973	14.1080
PERIOD-T2	5.0188	7.6543	9.8358	6.5880	7.6409	10.3403
PERIOD-T4	4.5059	6.0745	6.6395	5.3495	5.9054	6.3855
-MOM-M(-1)	0.7342	1.2029	1.1753	9.8119	8.9830	51.0443
0TH MOM-M0	1.2866	1.9864	2.7848	0.9694	1.1979	1.2604
1ST MOM-M1	0.9779	0.6498	0.3760	7.2370	4.9199	12.1790
2ND MOM-M2	1.2688	0.5843	0.2585	7.2795	4.2895	8.3938
3RD MOM-M3	1.7349	0.5508	0.2182	8.1375	4.2733	7.4798
4TH MOM-M4	2.4667	0.6038	0.2315	10.0424	4.8559	8.1270
HC(1/3)	3.4197	3.3045	2.7161	10.3071	9.0035	15.8500
B	1.2142	1.2993	1.6600	0.4143	0.4810	0.3075
E	0.4404	0.6084	0.7278	0.5836	0.6346	0.7865
D	0.9503	0.9027	0.8531	0.9109	0.8937	0.8311

Table X (Cont'd)

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RECORD NO.	55	56	57	58	59	60
DATE	12/ 2/63	12/ 3/63	12/ 4/63	12/ 5/63	12/ 6/63	12/ 7/63
H(1/3)	26.1235	9.0840	14.2022	12.5205	10.3183	9.5105
PERIOD-T1	9.9244	8.5189	8.7669	8.3974	8.3753	8.2231
PERIOD-T-1	11.6687	9.5428	10.1976	9.3244	9.0591	8.9971
PERIOD-T2	8.9521	7.9590	8.0049	7.8815	7.9861	7.7745
PERIOD-T4	5.9609	5.9657	5.6324	6.0004	6.3931	6.0590
-MOM-M(-1)	79.2111	7.8330	20.4601	14.5399	9.5941	8.0949
0TH MOM-M0	0.9113	1.3266	1.0918	1.1138	1.2237	1.2515
1ST MOM-M1	27.0034	3.8039	9.0349	7.3309	4.9920	4.3195
2ND MOM-M2	21.0115	3.2142	7.7668	6.2268	4.1189	3.6923
3RD MOM-M3	20.2694	3.1542	8.0240	6.0920	3.8065	3.5922
4TH MOM-M4	23.3451	3.5655	9.6651	6.8276	3.9785	3.9706
HC(1/3)	22.1925	8.0275	12.2793	11.1271	9.3460	8.5260
B	0.2105	0.5474	0.3707	0.3921	0.4554	0.5063
E	0.7461	0.6619	0.7106	0.6484	0.5993	0.6266
D	0.8495	0.8837	0.8646	0.8887	0.9058	0.8965

RECORD NO.	61	62	63	64	65	66
DATE	12/ 9/63	12/11/63	12/12/63	12/14/63	12/15/63	12/16/63
H(1/3)	5.0615	18.6681	19.9154	25.7471	22.5593	24.9612
PERIOD-T1	9.5088	10.6869	11.9350	8.7113	9.2775	8.5072
PERIOD-T-1	10.7342	12.4491	13.2854	9.7482	10.4261	9.8573
PERIOD-T2	8.8022	9.6390	10.9999	8.0673	8.6128	7.8831
PERIOD-T4	6.2079	6.2409	7.1666	5.7284	6.2188	5.9290
-MOM-M(-1)	2.7355	43.1556	52.4146	64.2804	52.7805	61.0928
0TH MOM-M0	1.9837	1.1609	1.2552	0.8058	0.9168	0.7992
1ST MOM-M1	1.0580	12.8059	13.0502	29.8837	21.5416	28.7609
2ND MOM-M2	0.8159	9.2551	8.0880	25.1324	16.9280	24.7386
3RD MOM-M3	0.7536	8.4231	6.2741	25.3109	15.7624	24.6201
4TH MOM-M4	0.8358	9.3809	6.2169	30.2359	17.2804	27.7823
HC(1/3)	4.3796	15.7257	16.8075	22.3289	19.6754	22.0852
B	1.0226	0.2992	0.2728	0.2009	0.2263	0.2001
E	0.7089	0.7621	0.7586	0.7041	0.6918	0.6590
D	0.8653	0.8424	0.8439	0.8672	0.8722	0.8848

RECORD NO.	67	68	69	70	71	72
DATE	12/17/63	12/18/63	12/19/63	12/20/63	12/21/63	12/23/63
H(1/3)	17.0744	18.4552	12.7564	11.3409	12.2057	10.0215
PERIOD-T1	9.0128	10.6911	9.6527	8.8969	8.7688	10.8989
PERIOD-T-1	9.9178	12.1748	10.8580	9.9721	9.6938	13.3516
PERIOD-T2	8.4802	9.8358	8.9862	8.2941	8.2263	9.4860
PERIOD-T4	6.4159	6.7692	6.6000	6.1396	6.1706	5.4851
-MOM-M(-1)	28.7610	41.2476	17.5754	12.7579	14.3654	13.3382
0TH MOM-M0	1.0237	1.1680	1.2685	1.2399	1.1780	1.6159
1ST MOM-M1	12.7025	12.5105	6.6201	5.8769	6.6719	3.6186
2ND MOM-M2	10.0027	8.6867	4.9722	4.6132	5.4320	2.7538
3RD MOM-M3	9.0980	7.3268	4.3766	4.3831	5.1341	2.8119
4TH MOM-M4	9.5933	7.4841	4.5062	4.8314	5.6320	3.6136
HC(1/3)	15.1395	15.8417	11.1916	9.9773	10.7890	8.1856
B	0.2876	0.2862	0.3947	0.4424	0.4055	0.6153
E	0.6539	0.7255	0.6787	0.6723	0.6613	0.8159
D	0.8867	0.8584	0.8773	0.8798	0.8839	0.8168

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RECORD NO.	73	74	75	76	77	78
DATE	12/24/63	6/ 6/64	6/ 7/64	6/ 8/64	6/11/64	6/15/64
H(1/3)	17.2991	3.8854	5.2174	6.4437	6.6276	11.6628
PERIOD-T1	11.1834	5.9727	8.2083	6.7117	11.1981	9.4109
PERIOD-T-1	13.1407	6.4727	9.5782	7.3063	12.9279	10.1957
PERIOD-T2	10.0211	5.7691	7.4575	6.4299	10.1138	8.8966
PERIOD-T4	6.3781	5.1032	5.2452	5.4223	6.4010	6.7599
-MOM-M(-1)	39.1173	0.9720	2.5935	3.0177	5.6487	13.7951
0TH MOM-M0	1.2620	1.4221	1.6866	1.2409	2.0415	1.2934
1ST MOM-M1	10.5084	0.9926	1.3023	2.4294	1.5404	5.6759
2ND MOM-M2	7.3529	1.1191	1.2077	2.4780	1.0596	4.2403
3RD MOM-M3	6.5472	1.3410	1.3489	2.7540	0.9290	3.6527
4TH MOM-M4	7.1356	1.6865	1.7330	3.3274	1.0209	3.6633
HC(1/3)	14.4998	3.6680	4.5104	5.9602	5.5462	10.3574
B	0.3284	1.1327	1.0163	0.7060	0.8518	0.4183
E	0.7713	0.4664	0.7108	0.5375	0.7742	0.6501
D	0.8382	0.9441	0.8645	0.9250	0.8368	0.8881

RECORD NO.	79	80	81	82	83	84
DATE	6/18/64	6/19/64	6/21/64	6/22/64	6/28/64	7/ 1/64
H(1/3)	3.2798	2.4615	3.7296	3.2220	6.0510	6.1250
PERIOD-T1	7.5040	7.7649	7.7503	7.3800	7.1536	5.6027
PERIOD-T-1	8.3220	9.3606	8.6571	8.3826	7.8566	5.9199
PERIOD-T2	7.0568	7.0862	7.2834	6.9168	6.8081	5.4576
PERIOD-T4	5.3738	5.2357	5.7030	5.4619	5.5618	4.9329
-MOM-M(-1)	0.8905	0.5641	1.1978	0.8656	2.8615	2.2092
0TH MOM-M0	1.9447	2.3229	1.8835	1.9296	1.3649	1.0625
1ST MOM-M1	0.5629	0.3064	0.7048	0.5524	2.0100	2.6295
2ND MOM-M2	0.5330	0.2977	0.6470	0.5354	1.9491	3.1078
3RD MOM-M3	0.5809	0.3373	0.6738	0.5856	2.0939	3.8635
4TH MOM-M4	0.7286	0.4288	0.7853	0.7085	2.4875	5.0420
HC(1/3)	2.9150	2.1641	3.3495	2.9030	5.5250	5.8380
B	1.4930	2.0767	1.2947	1.4946	0.7695	0.7052
E	0.6482	0.6739	0.6220	0.6135	0.5767	0.4278
D	0.8888	0.8792	0.8981	0.9010	0.9131	0.9531

RECORD NO.	85	86	87	88	89	90
DATE	7/ 2/64	7/ 3/64	2/27/67	2/28/67	3/ 2/67	3/ 3/67
H(1/3)	6.2583	5.2639	13.6741	13.7458	12.3353	11.2981
PERIOD-T1	5.8105	8.1147	7.1938	8.9144	9.8869	10.8683
PERIOD-T-1	6.2279	9.0301	8.1925	10.1014	11.2680	11.7670
PERIOD-T2	5.6189	7.5997	6.7465	8.2816	9.0447	10.2640
PERIOD-T4	4.9450	5.7110	5.3772	6.1606	6.1601	7.5763
-MOM-M(-1)	2.4263	2.4889	15.2374	18.9855	17.0547	14.9410
0TH MOM-M0	1.0901	1.6600	0.9131	1.1285	1.3212	1.5176
1ST MOM-M1	2.6470	1.3409	10.2070	8.3236	6.0436	4.6123
2ND MOM-M2	3.0609	1.1838	10.1364	6.7975	4.5893	2.9897
3RD MOM-M3	3.7752	1.2120	11.2960	6.4699	4.2724	2.8641
4TH MOM-M4	4.9417	1.4328	13.8396	7.0707	4.7745	2.0562
HC(1/3)	5.8949	4.6560	12.3646	12.1141	10.5532	9.9297
B	0.7050	0.9411	0.3500	0.3651	0.4346	0.4380
E	0.4749	0.6598	0.6039	0.6683	0.7322	0.6746
D	0.9419	0.8845	0.9042	0.8813	0.8555	0.8789

Table X (Cont'd)

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RECORD NO.	91	92	93
DATE	3/ 4/67	3/ 8/67	3/ 9/67
H(1/3)	7.1440	20.1992	16.5582
PERIOD-T1	8.9975	7.7886	9.1264
PERIOD-T-1	10.0839	8.8293	10.2143
PERIOD-T2	8.4380	7.2817	8.4542
PERIOD-T4	6.4865	5.6549	6.0187
-MOM-M(-1)	5.1193	35.8337	27.8570
0TH MOM-M0	1.5799	0.8134	1.0526
1ST MOM-M1	2.2275	20.5716	11.7974
2ND MOM-M2	1.7687	18.9863	9.4651
3RD MOM-M3	1.6063	19.9504	9.0827
4TH MOM-M4	1.6595	23.4397	10.3152
HC(1/3)	6.3717	18.0841	14.3724
B	0.6829	0.2412	0.3119
E	0.6396	0.6300	0.7023
D	0.8919	0.8953	0.8680

VI. SPECTRAL SHAPE ANALYSIS

Certain aspects of a spectrum, such as its significant wave height ($H_{1/3}$) and mean average period T_1 can be reduced to finite values, but the shape and distribution of the wave energy content cannot be expressed in simple mathematical terms. A method of classifying spectra into groups or "families" of equal wave heights or periods was discussed in (8). A similar approach was taken in analyzing the data from Station K. The 93 records were divided into groups of wave heights and periods as shown in Table XI. The details of the mean spectra representing each group are given in Appendix C, along with plots illustrating the mean spectra, one third highest and lowest means and the envelope of the highest and lowest ordinates in each group.

Figure 8 illustrates the distribution of T_1 and $H_{1/3}$ based on the alternate sorting by wave height and period. As expected, the two lines do not coincide and cross one another between T_1 = 8.5-9.5 seconds and $H_{1/3}$ = 14-19 feet. Due to the different records used in each sort, including records of storm growth or decay, and swell,for example, the lack of perfect correlation is not surprising. The nature of the physical phenomenon represented by the spectra is rather complex and is described by the standard deviation of the variables within the band intervals selected.

Comparison with similar data analyzed for other stations such as 'I' (4) and 'P' (3), indicates that the small sample of data is the cause for the lack of consistent trends in the data. Nevertheless, the general trends are maintained.

Table XI

Principal Parameters of Spectra Arranged in Groups

STATION K

Wave Height Sort

Group	Wave Height Band Width	$H_{1/3}$ Ft.	T(1) Sec.	ε	No. of Records
1	>3	2.46	7.76	0.674	1
2	3-6	4.35	7.18	0.625	19
3	6-9	7.35	8.24	0.669	23
4	9-12	10.45	8.76	0.690	16
5	12-16	13.64	8.64	0.693	13
6	16-21	17.95	9.70	0.727	13
7	21-27	24.47	9.35	0.720	6
8	27-34	31.31	10.36	0.787	2

Period Sort

Group	Period Band Width	$H_{1/3}$ (ft.)	T(1) Sec.	ε	No. of Records
1	>6.5	5.45	5.73	0.484	7
2	6.5-7.0	10.21	6.92	0.618	4
3	7.0-7.5	9.29	7.24	0.609	8
4	7.5-8.0	9.05	7.80	0.639	9
5	8.0-8.5	9.56	8.22	0.663	14
6	8.5-9.0	13.27	8.72	0.688	17
7	9.0-9.5	17.84	9.19	0.723	9
8	9.5-10.0	18.42	9.78	0.738	6
9	10.0-10.5	14.09	10.31	0.731	3
10	10.5-11.0	12.22	10.85	0.753	12
11	<11	21.84	12.03	0.783	4

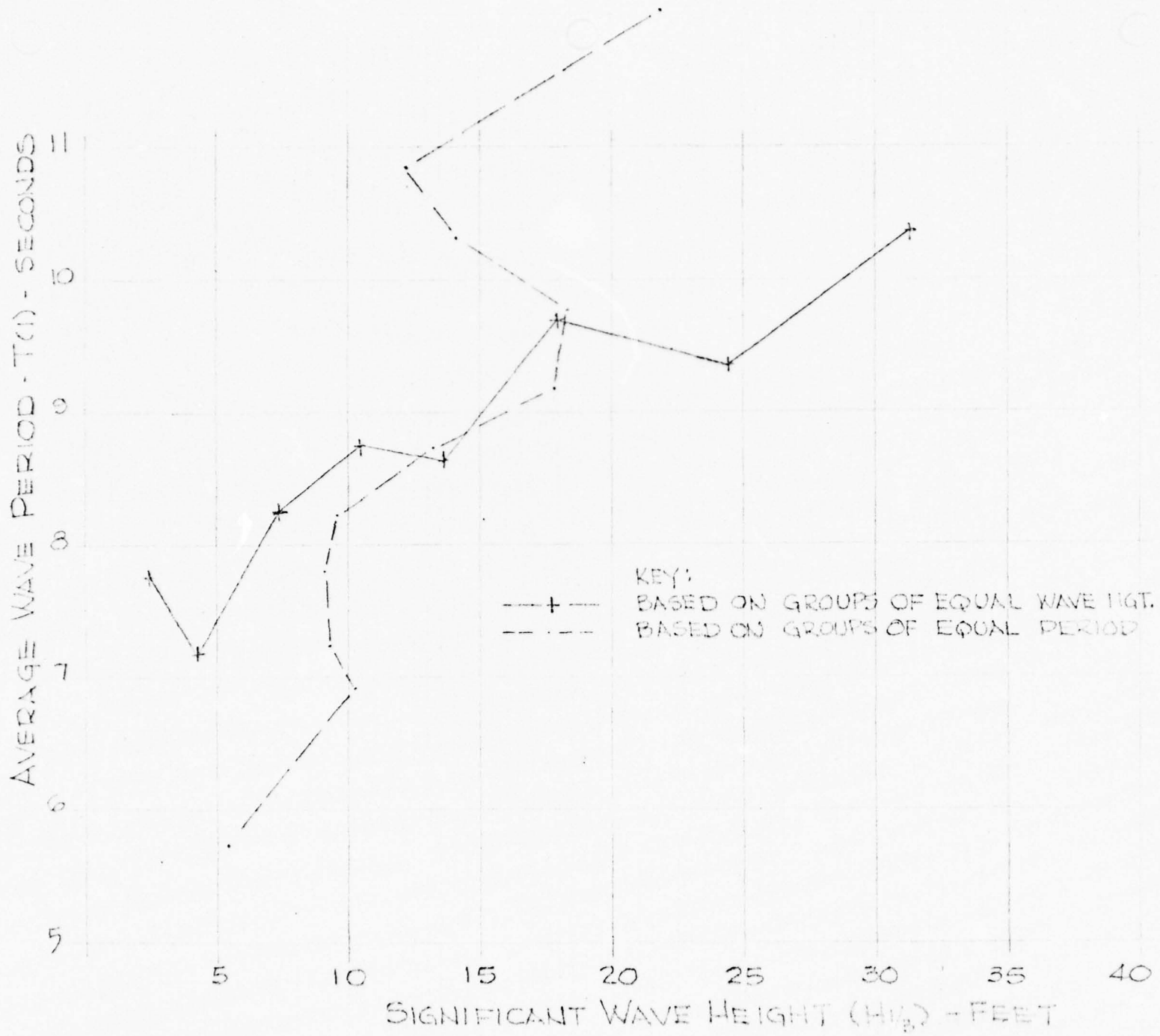

Figure 8. Trends of Significant Height vs. Average Period, Spectra Grouped by Height and by Period.

VII. CONCLUDING REMARKS

The format chosen to present the Station 'K' wave data selection and analysis is based on experience gathered throughout the analysis of Stations 'I' and 'P' over the past few years. While in these cases methods were developed and tried out as the project was proceeding, the Station 'K' analysis is a typical example of the conclusions reached in (3) and (4). Unfortunately, the amount of data which was available for Station 'K' was 1/3 to 1/4 of that used in Stations 'I' and 'P'. Hence, the presentation cannot be expected to yield a conclusive result as in the previous cases. However, the type of analysis applied to the data is typical of what may be considered as the necessary information required in documenting wave data for engineering applications.

No attempts were made here to compare the data derived with the previously obtained information from other ocean locations.

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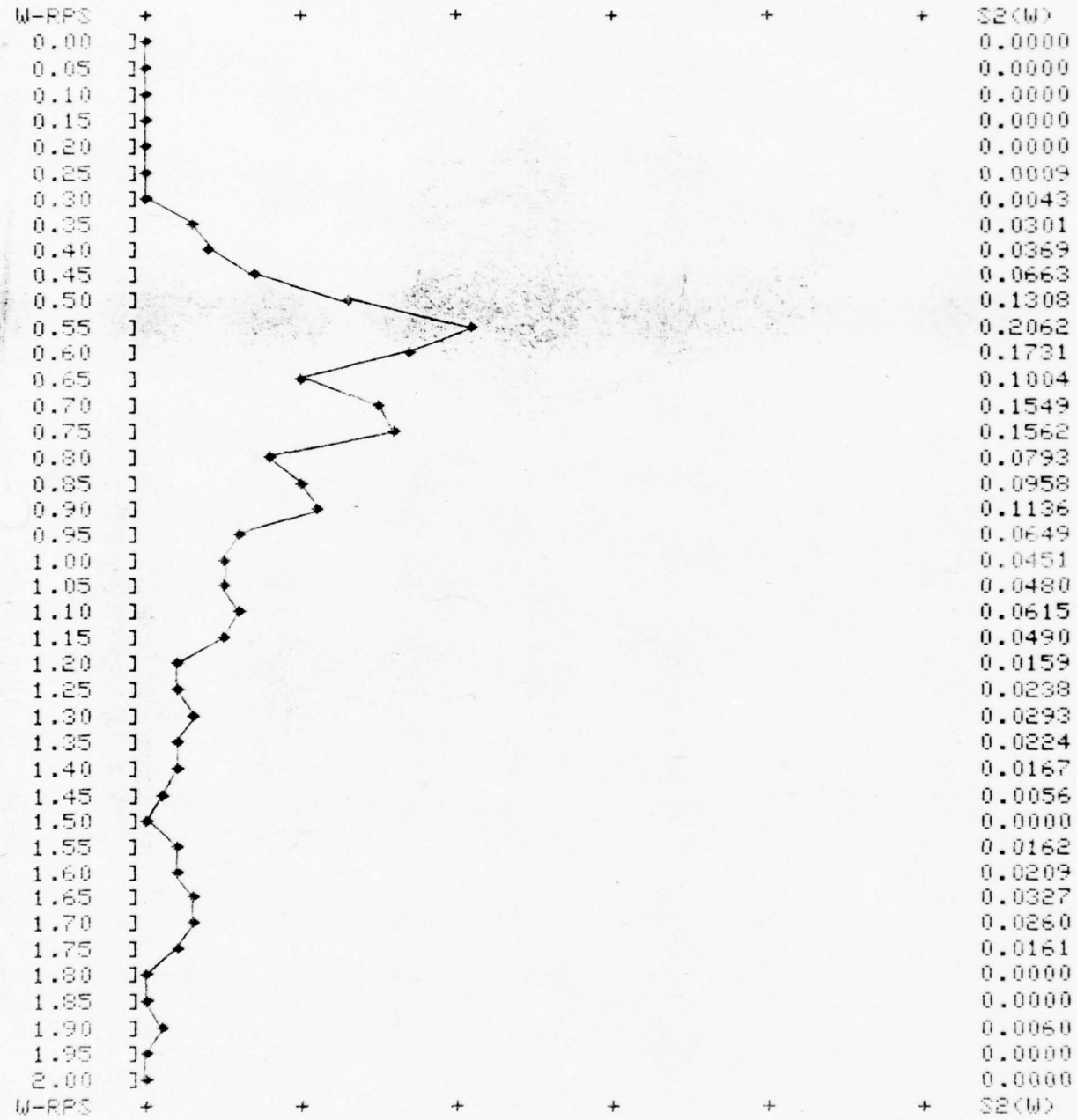
Appendix A

Spectra Plots

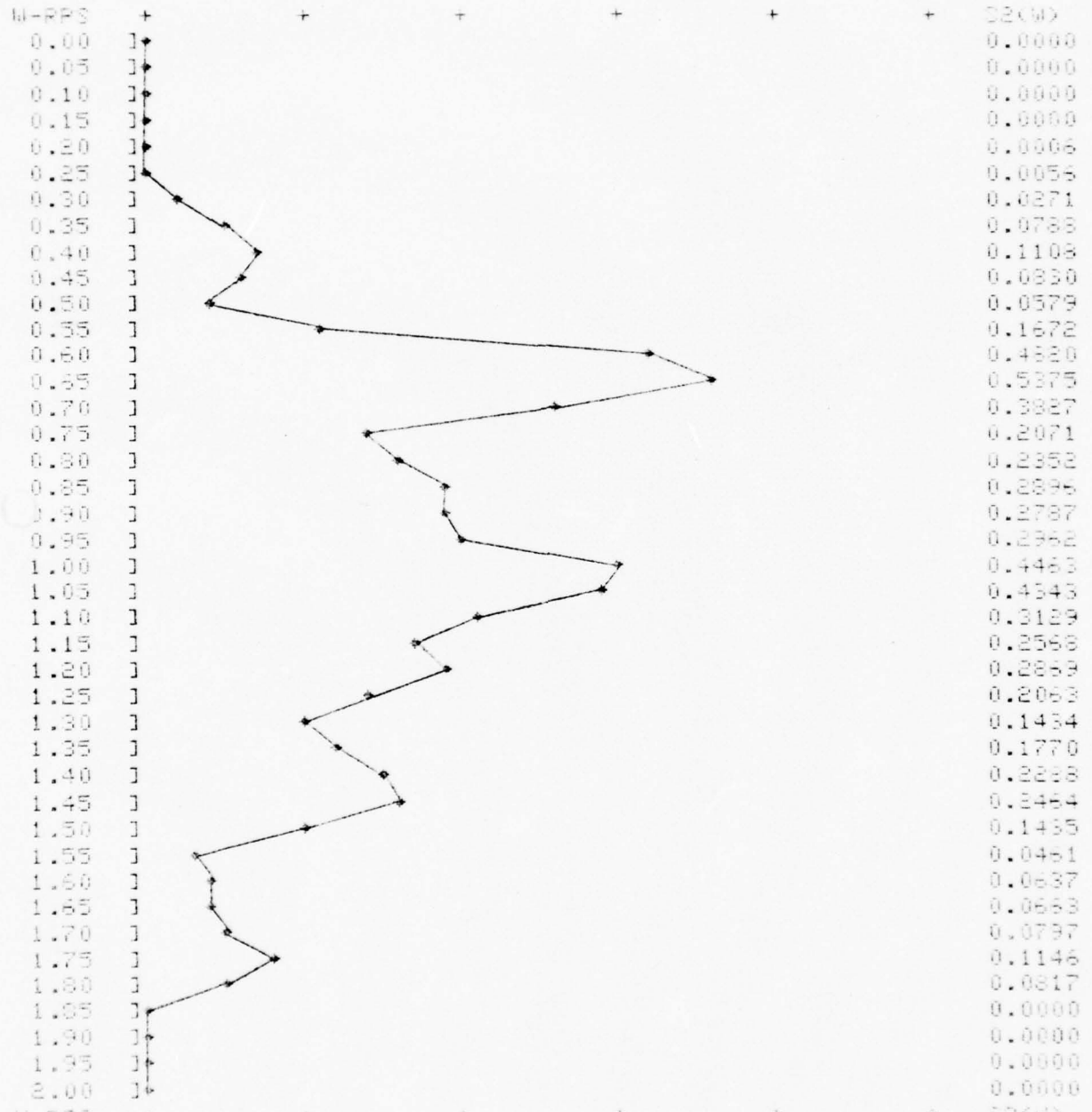
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. ω

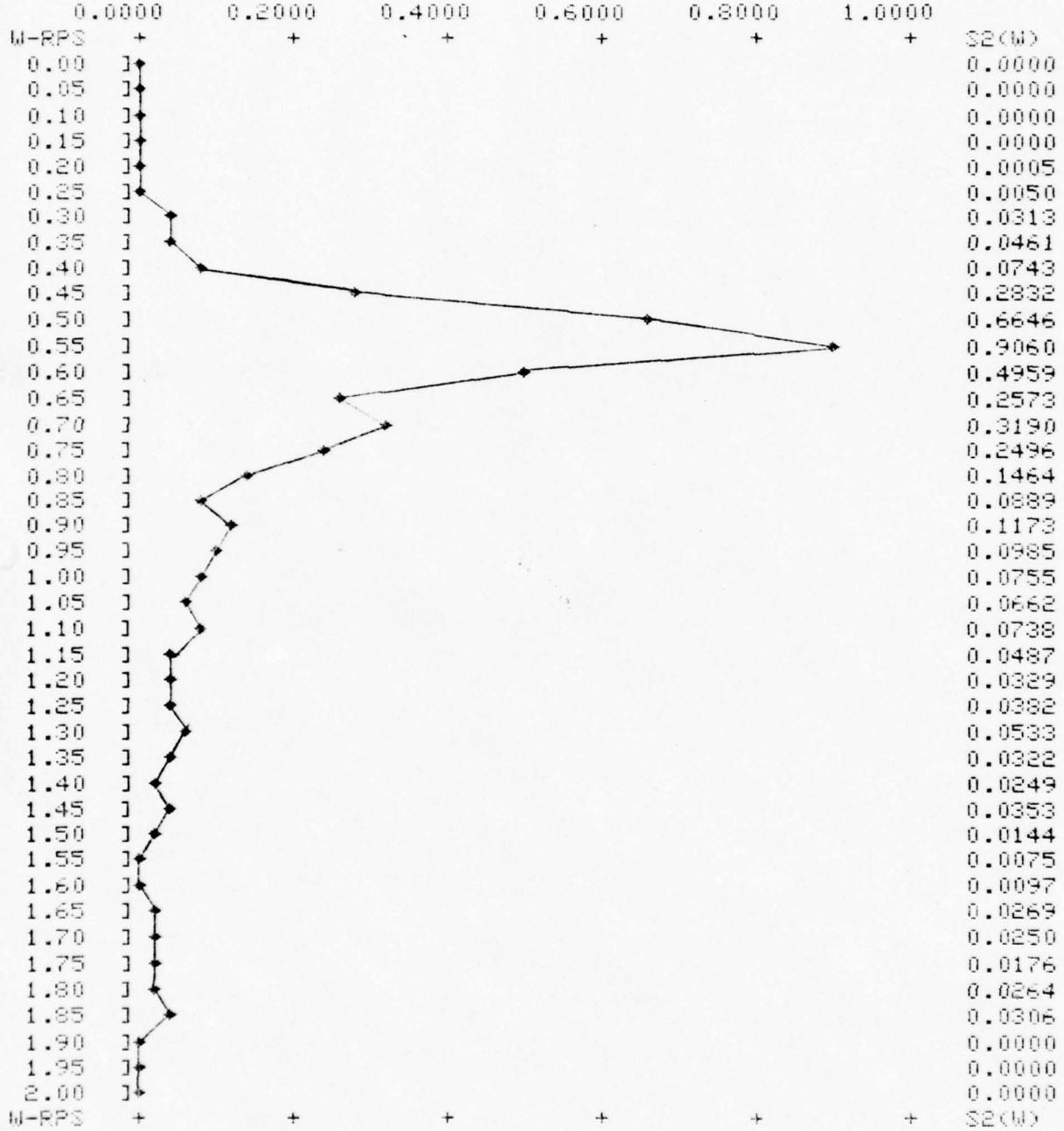
SCALE FOR S2, M**2/RAD



EXPLOR 1200 06 09 55 K J. ARCH 1900 15 11 74 2002

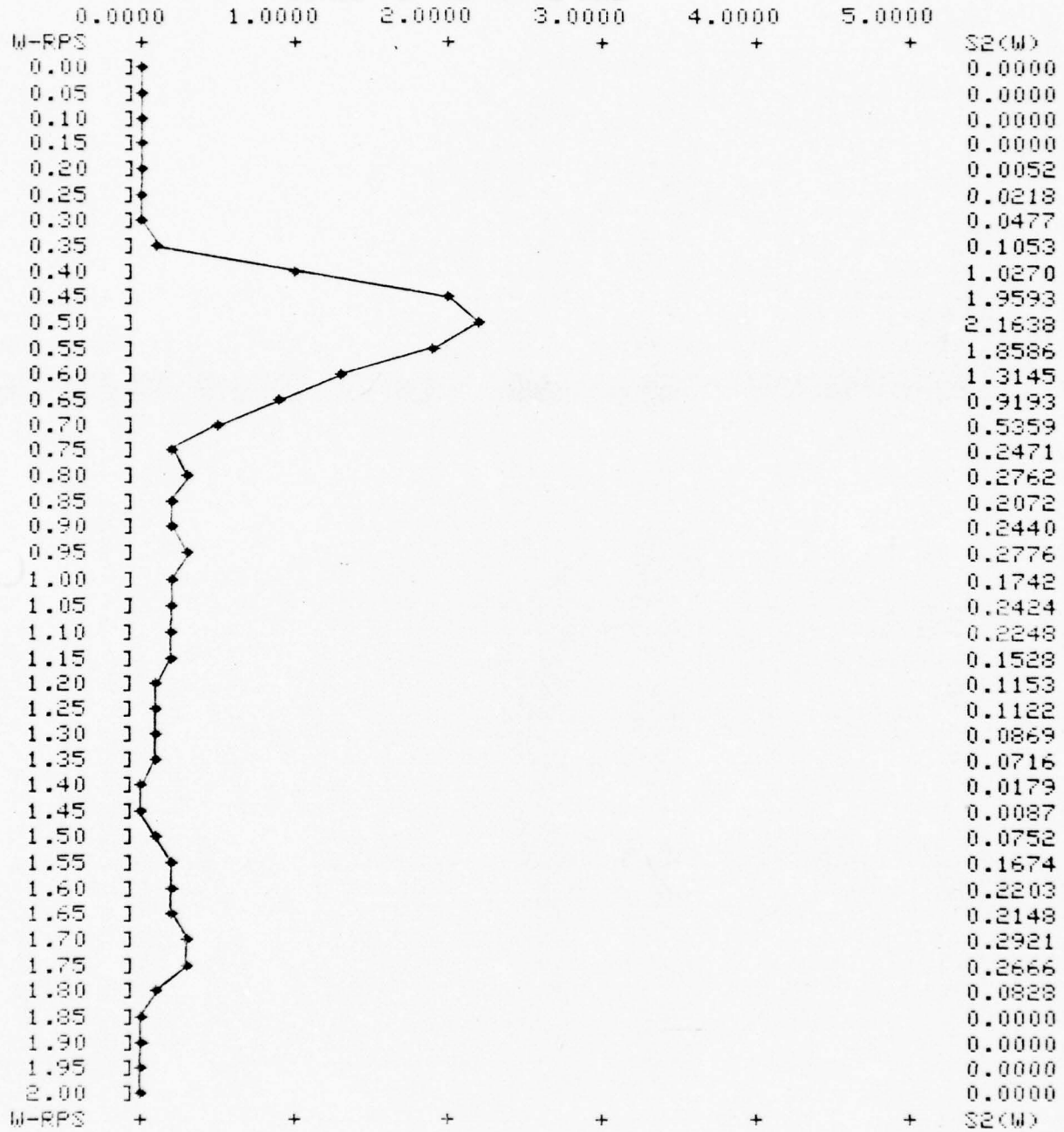
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

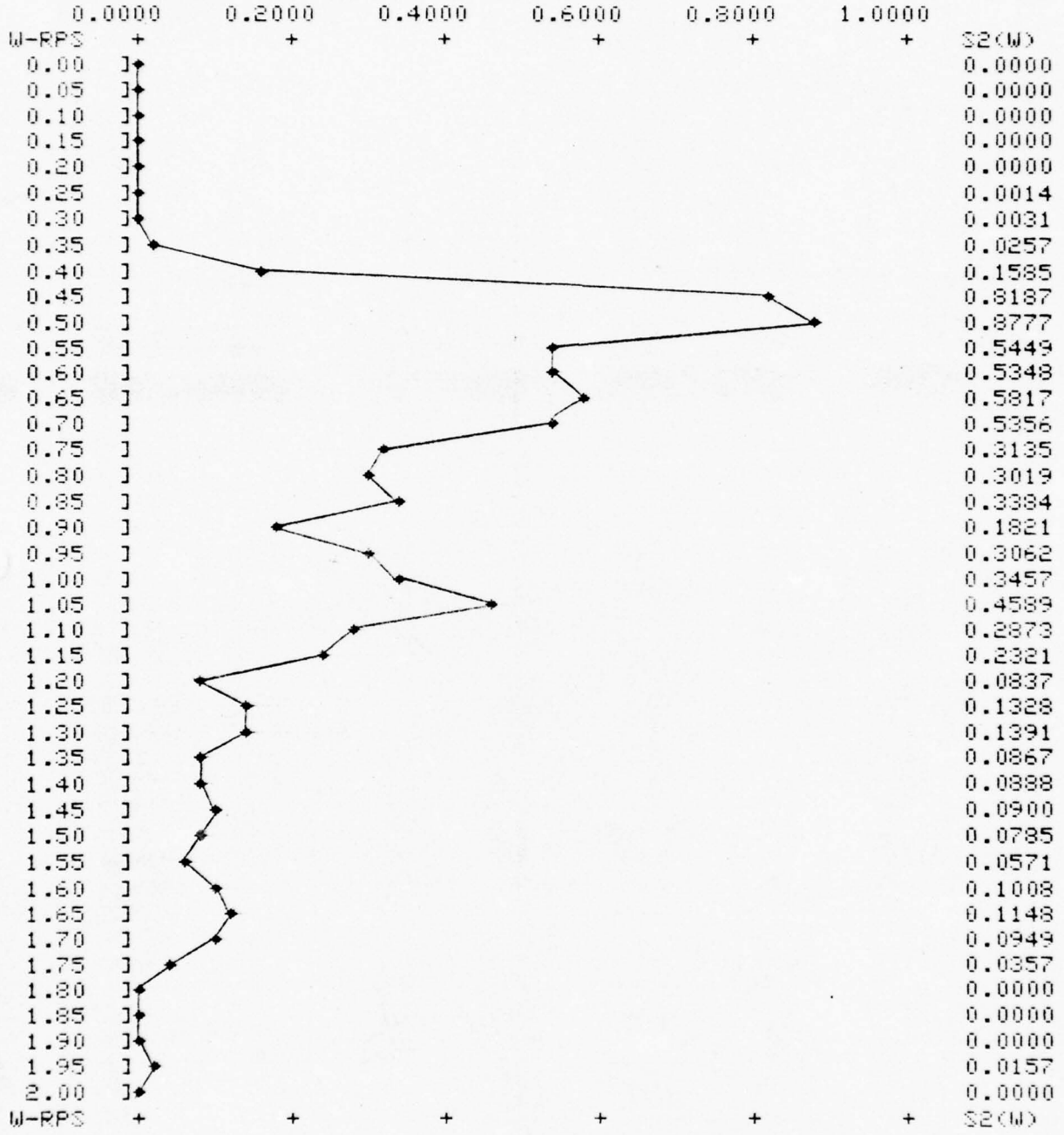
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0052
0.25	0.0218
0.30	0.0477
0.35	0.1053
0.40	1.0270
0.45	1.9593
0.50	2.1638
0.55	1.8586
0.60	1.3145
0.65	0.9193
0.70	0.5359
0.75	0.2471
0.80	0.2762
0.85	0.2072
0.90	0.2440
0.95	0.2776
1.00	0.1742
1.05	0.2424
1.10	0.2248
1.15	0.1528
1.20	0.1153
1.25	0.1122
1.30	0.0869
1.35	0.0716
1.40	0.0179
1.45	0.0087
1.50	0.0752
1.55	0.1674
1.60	0.2203
1.65	0.2148
1.70	0.2921
1.75	0.2666
1.80	0.0828
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000
W-RPS	S2(W)

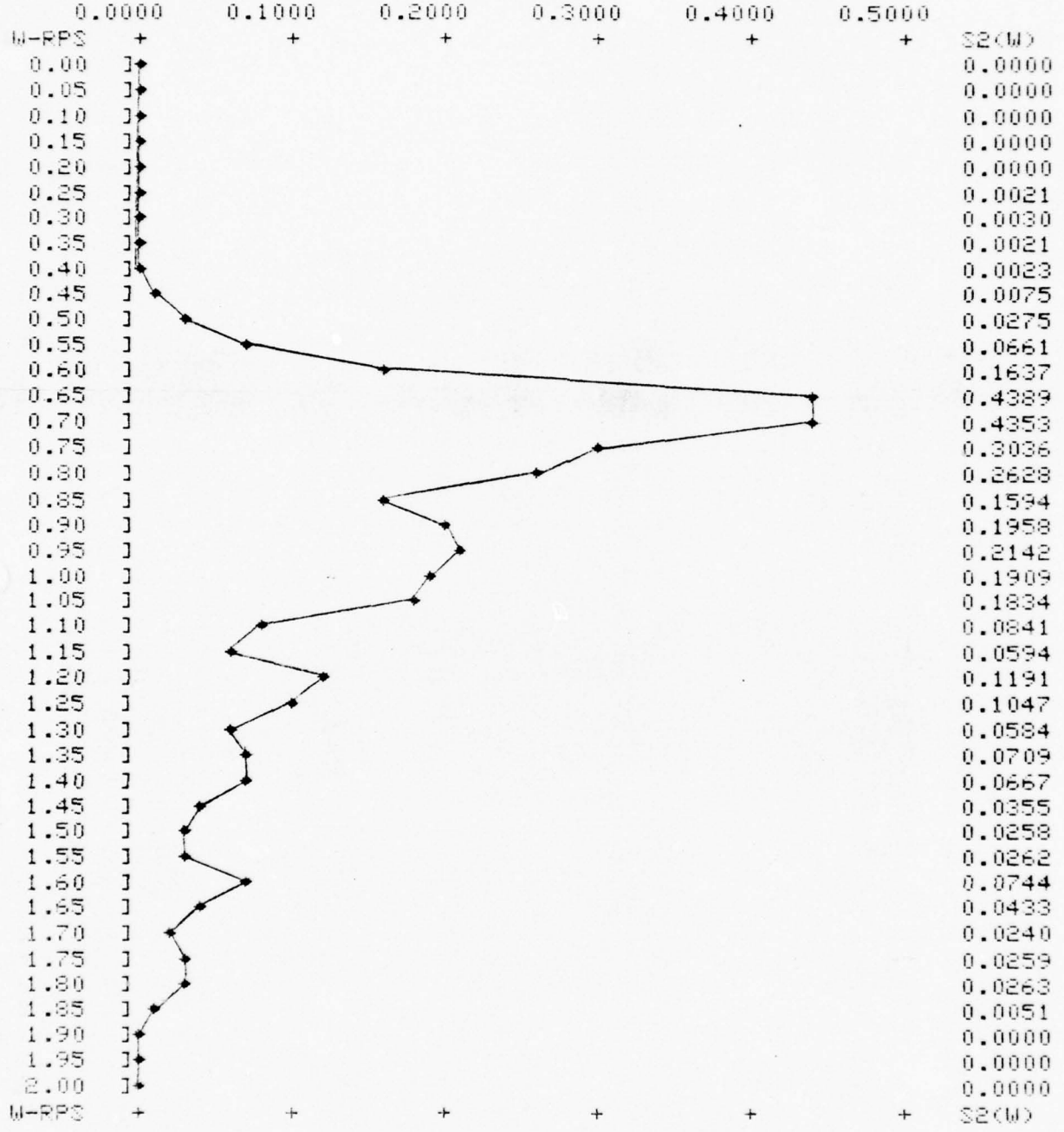
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

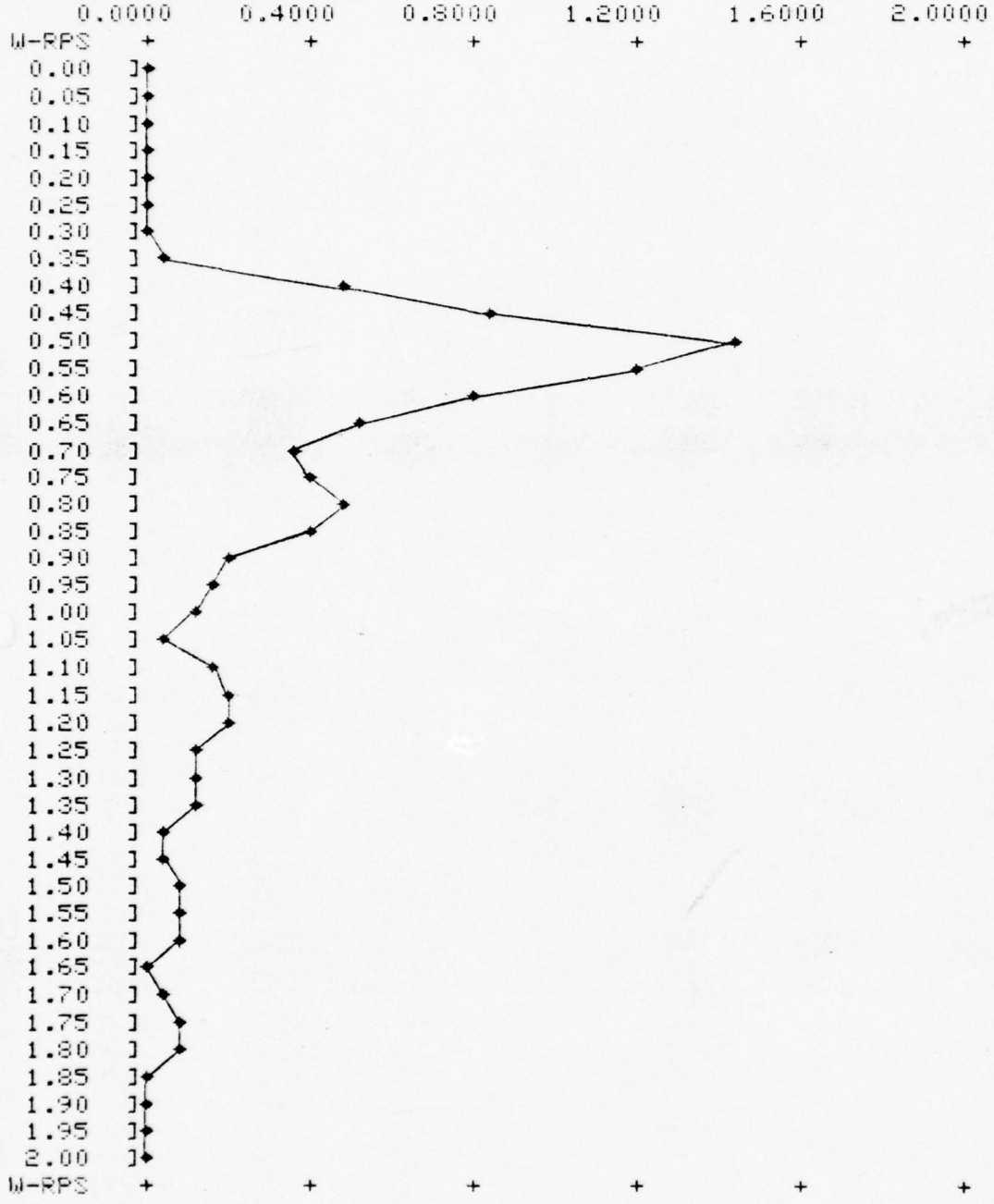
SCALE FOR S2, M**2/RAD



EXPLOR 1135 17 09 55 K J.ARCH 1350 16 11 74 2006

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

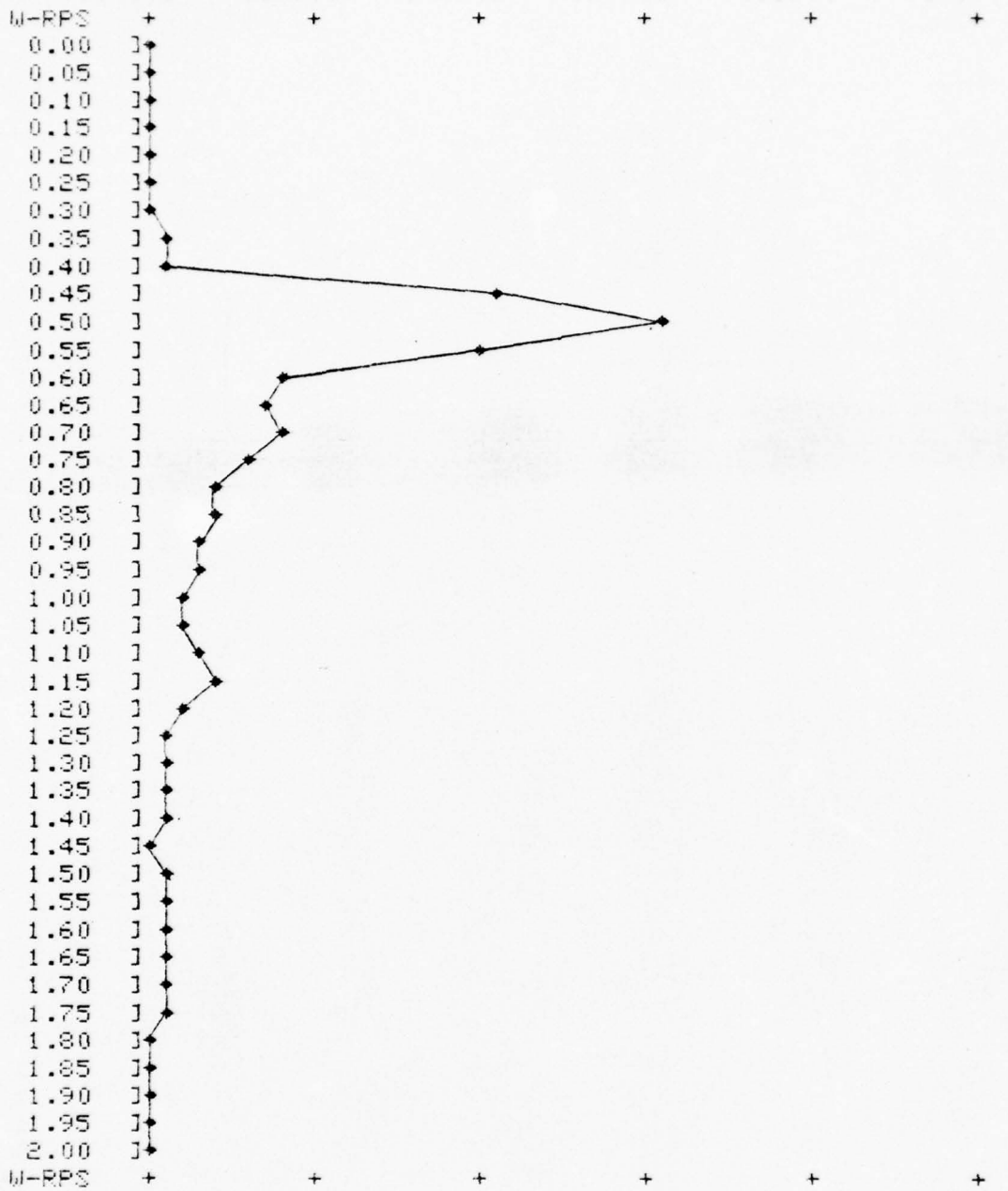


W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0033
0.25	0.0093
0.30	0.0155
0.35	0.0554
0.40	0.4722
0.45	0.8412
0.50	1.4482
0.55	1.2094
0.60	0.7880
0.65	0.5172
0.70	0.3686
0.75	0.3912
0.80	0.4854
0.85	0.4186
0.90	0.1937
0.95	0.1456
1.00	0.1094
1.05	0.0535
1.10	0.1469
1.15	0.1818
1.20	0.1901
1.25	0.1008
1.30	0.1173
1.35	0.1081
1.40	0.0462
1.45	0.0578
1.50	0.0662
1.55	0.0979
1.60	0.0725
1.65	0.0000
1.70	0.0371
1.75	0.0804
1.80	0.0728
1.85	0.0030
1.90	0.0000
1.95	0.0000
2.00	0.0000

W-RPS S2(W)

PLOT OF S2 VS. W

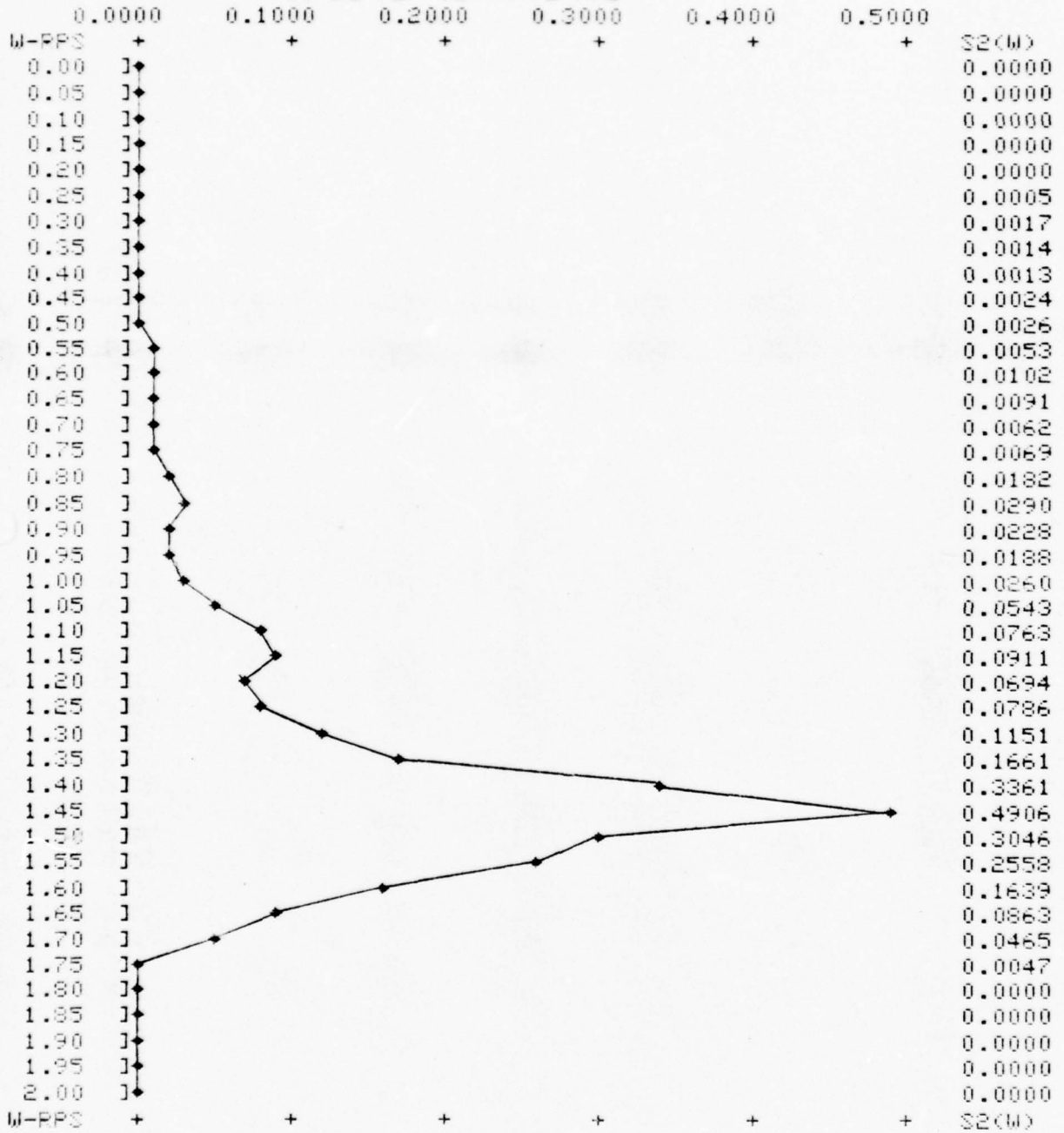
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0075
0.25	0.0112
0.30	0.0231
0.35	0.0884
0.40	0.1295
0.45	2.0800
0.50	3.0992
0.55	1.9780
0.60	0.7512
0.65	0.7448
0.70	0.7853
0.75	0.5981
0.80	0.4392
0.85	0.4318
0.90	0.2917
0.95	0.2643
1.00	0.2259
1.05	0.2205
1.10	0.3070
1.15	0.3600
1.20	0.1984
1.25	0.1075
1.30	0.0714
1.35	0.0814
1.40	0.1400
1.45	0.0436
1.50	0.0942
1.55	0.1400
1.60	0.1279
1.65	0.0906
1.70	0.0913
1.75	0.0521
1.80	0.0000
1.85	0.0000
1.90	0.0172
1.95	0.0000
2.00	0.0000

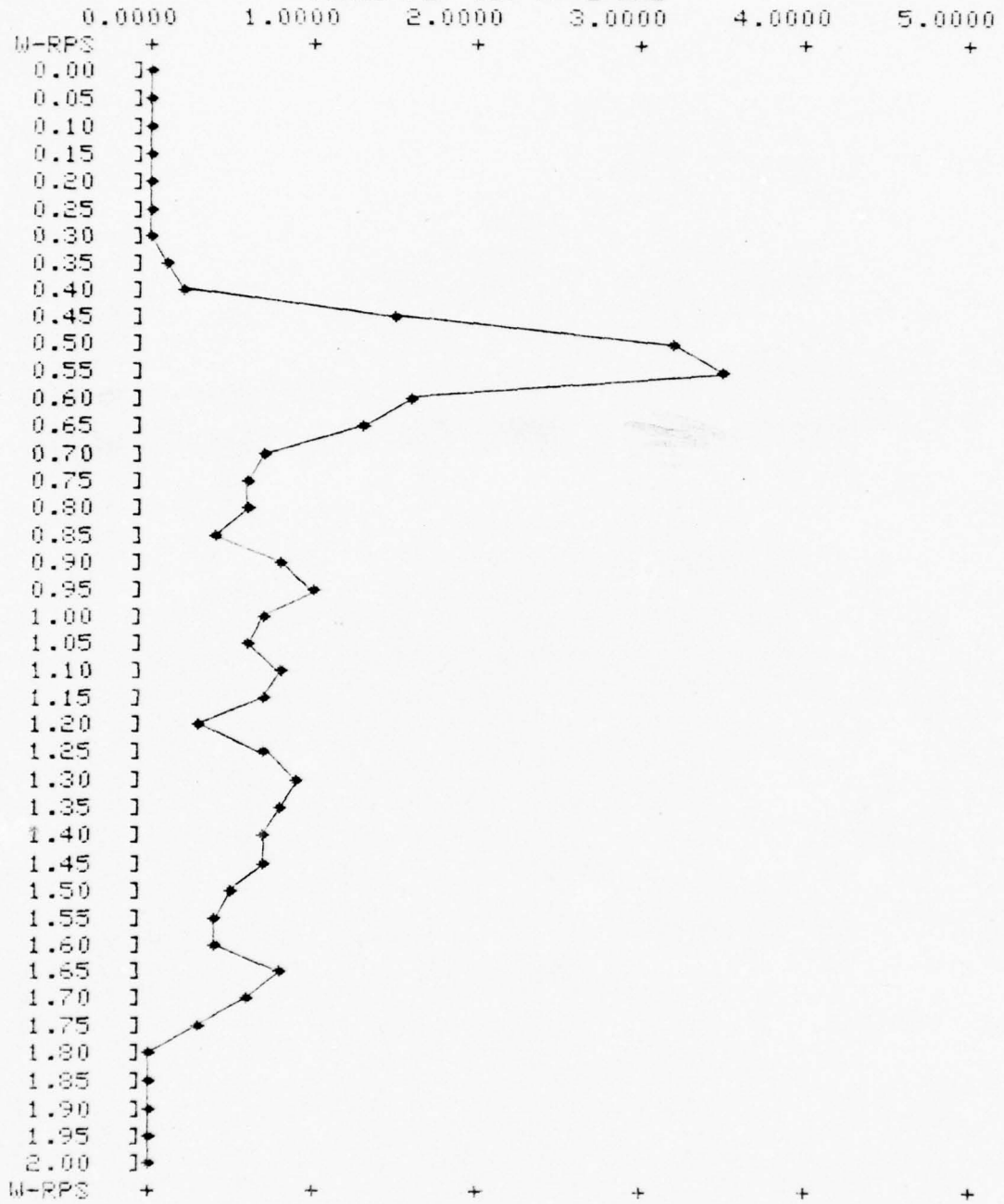
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

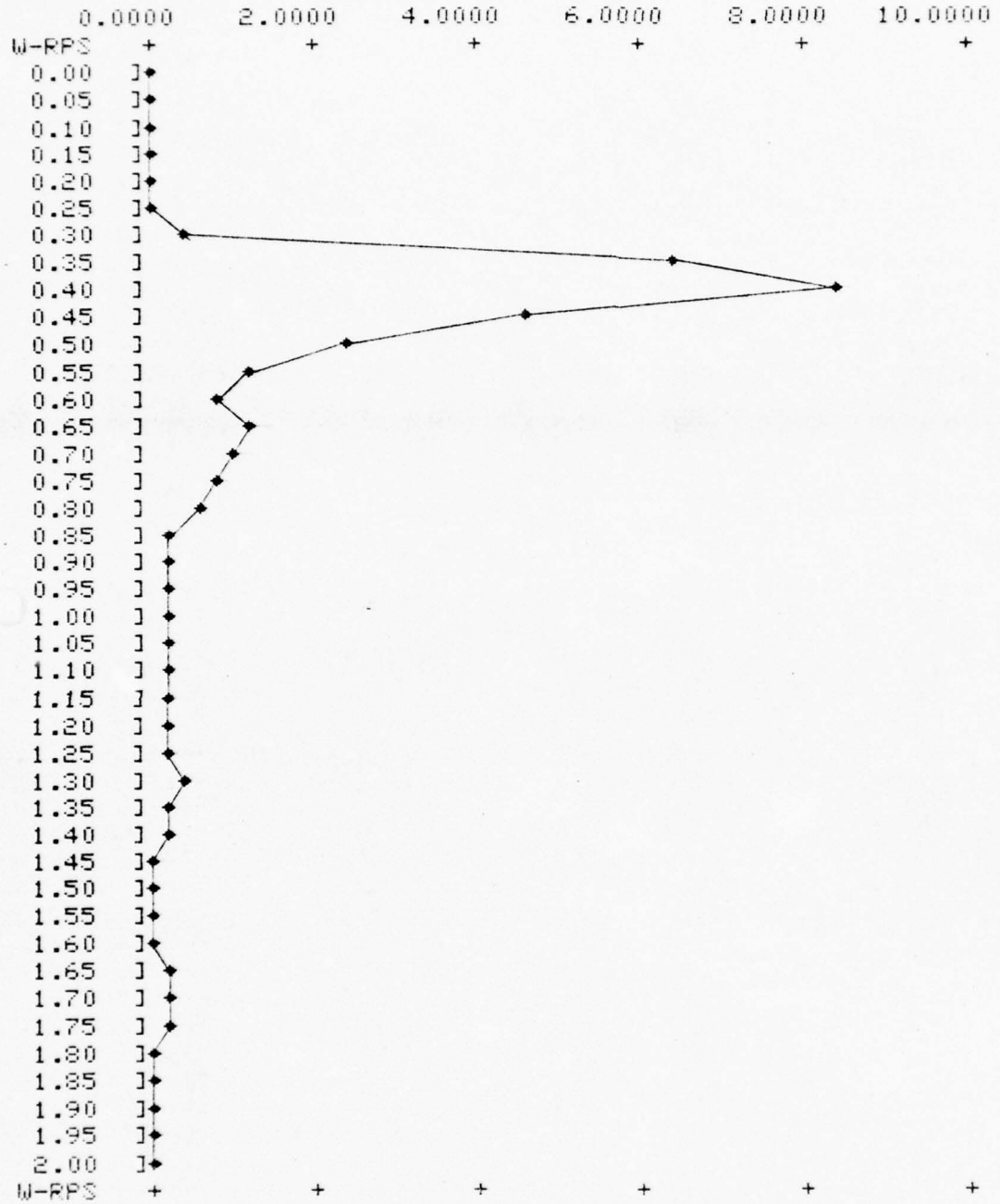
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0000
0.25	0.0133
0.30	0.0341
0.35	0.0605
0.40	0.1670
0.45	1.5330
0.50	3.1934
0.55	3.4820
0.60	1.5930
0.65	1.2708
0.70	0.7233
0.75	0.5901
0.80	0.5923
0.85	0.3972
0.90	0.7727
0.95	0.9679
1.00	0.6874
1.05	0.6200
1.10	0.7519
1.15	0.6877
1.20	0.3196
1.25	0.6800
1.30	0.9196
1.35	0.7924
1.40	0.7053
1.45	0.6734
1.50	0.5070
1.55	0.4218
1.60	0.3930
1.65	0.7900
1.70	0.6308
1.75	0.2663
1.80	0.0000
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

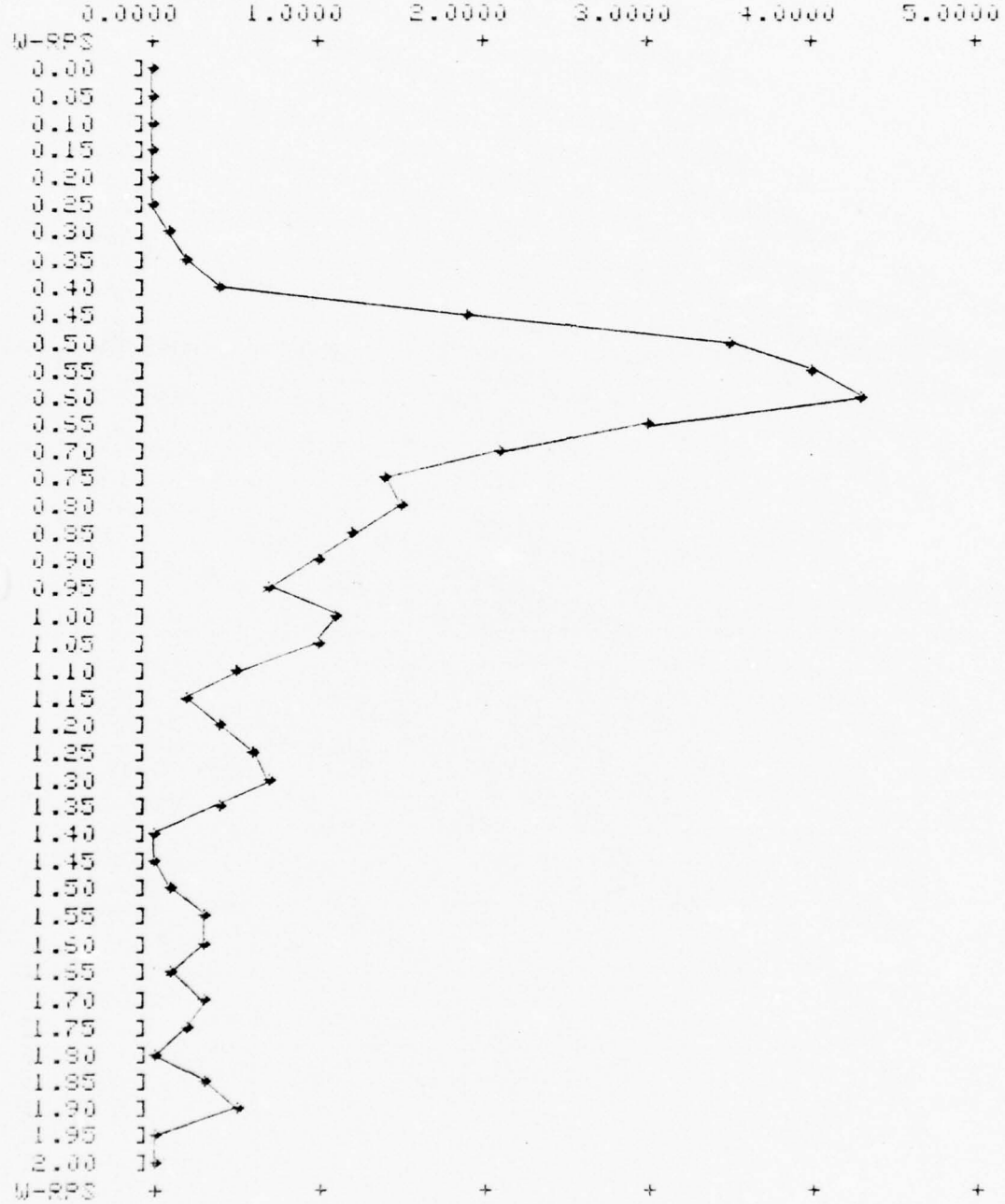


W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0094
0.25	0.0363
0.30	0.4032
0.35	6.4001
0.40	8.4209
0.45	4.5198
0.50	2.3533
0.55	1.2998
0.60	0.7759
0.65	1.1649
0.70	1.0572
0.75	0.7036
0.80	0.6212
0.85	0.2302
0.90	0.2130
0.95	0.2534
1.00	0.2562
1.05	0.2889
1.10	0.2472
1.15	0.1942
1.20	0.1351
1.25	0.2443
1.30	0.3324
1.35	0.2088
1.40	0.1098
1.45	0.0316
1.50	0.0586
1.55	0.0999
1.60	0.0968
1.65	0.1408
1.70	0.1778
1.75	0.1439
1.80	0.0530
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

EXPLOR 1150 13 03 56 N HATTON 1900 15 11 74 2011

PLOT OF S2 VS. w

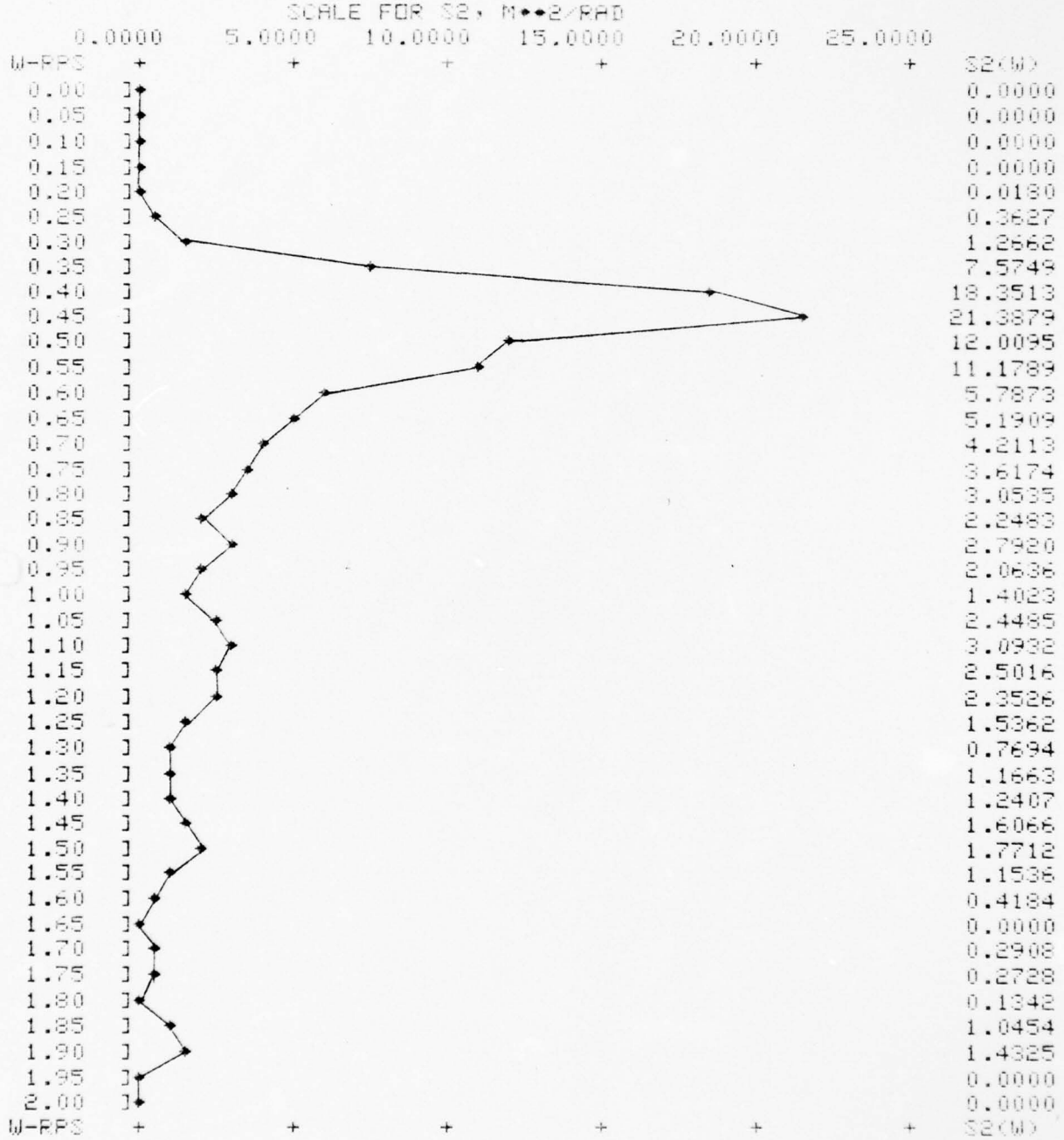
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0000
0.25	0.0000
0.30	0.0976
0.35	0.1589
0.40	0.3781
0.45	1.9114
0.50	3.4599
0.55	3.9783
0.60	4.3212
0.65	2.9812
0.70	2.0650
0.75	1.3902
0.80	1.4823
0.85	1.1789
0.90	0.9934
0.95	0.7287
1.00	1.0514
1.05	1.0185
1.10	0.5002
1.15	0.2221
1.20	0.4365
1.25	0.6247
1.30	0.6826
1.35	0.3755
1.40	0.0000
1.45	0.0000
1.50	0.0575
1.55	0.2609
1.60	0.3822
1.65	0.1316
1.70	0.2930
1.75	0.1997
1.80	0.0274
1.85	0.3193
1.90	0.4510
1.95	0.0000
2.00	0.0000

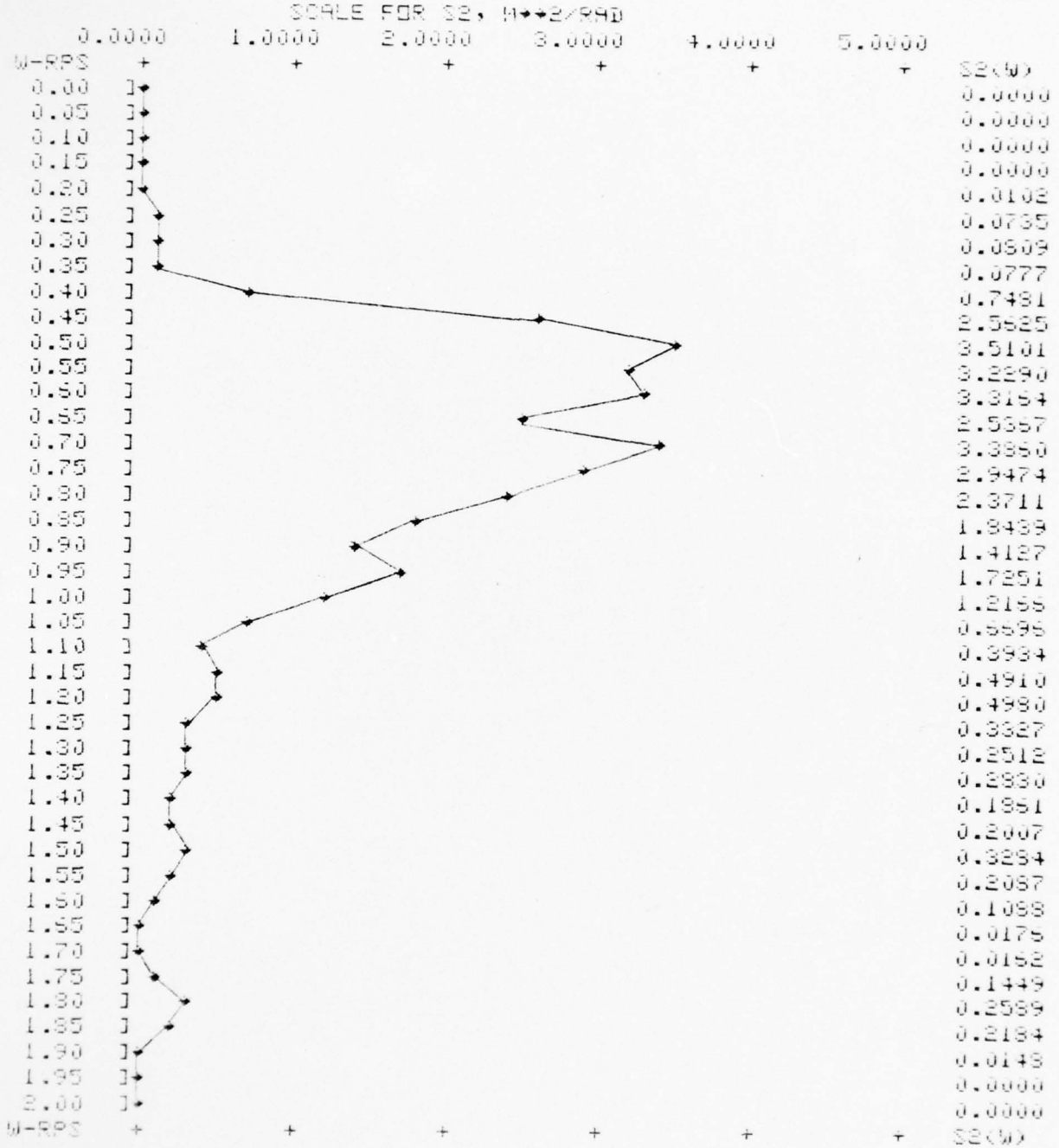
EXPLOR 1200 21 03 56 K VINCE 1345 05 12 74 5001

PLOT OF S2 VS. W



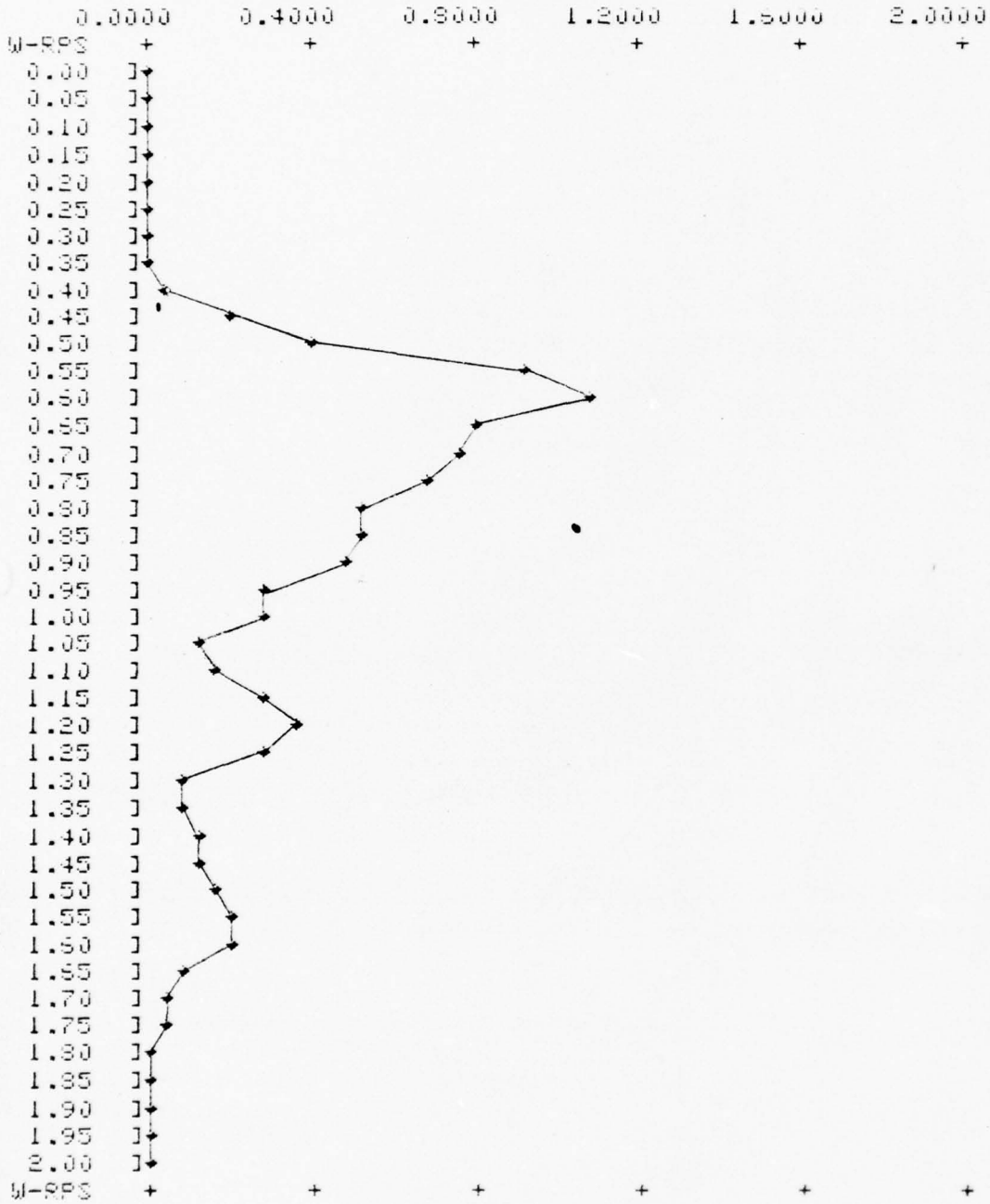
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

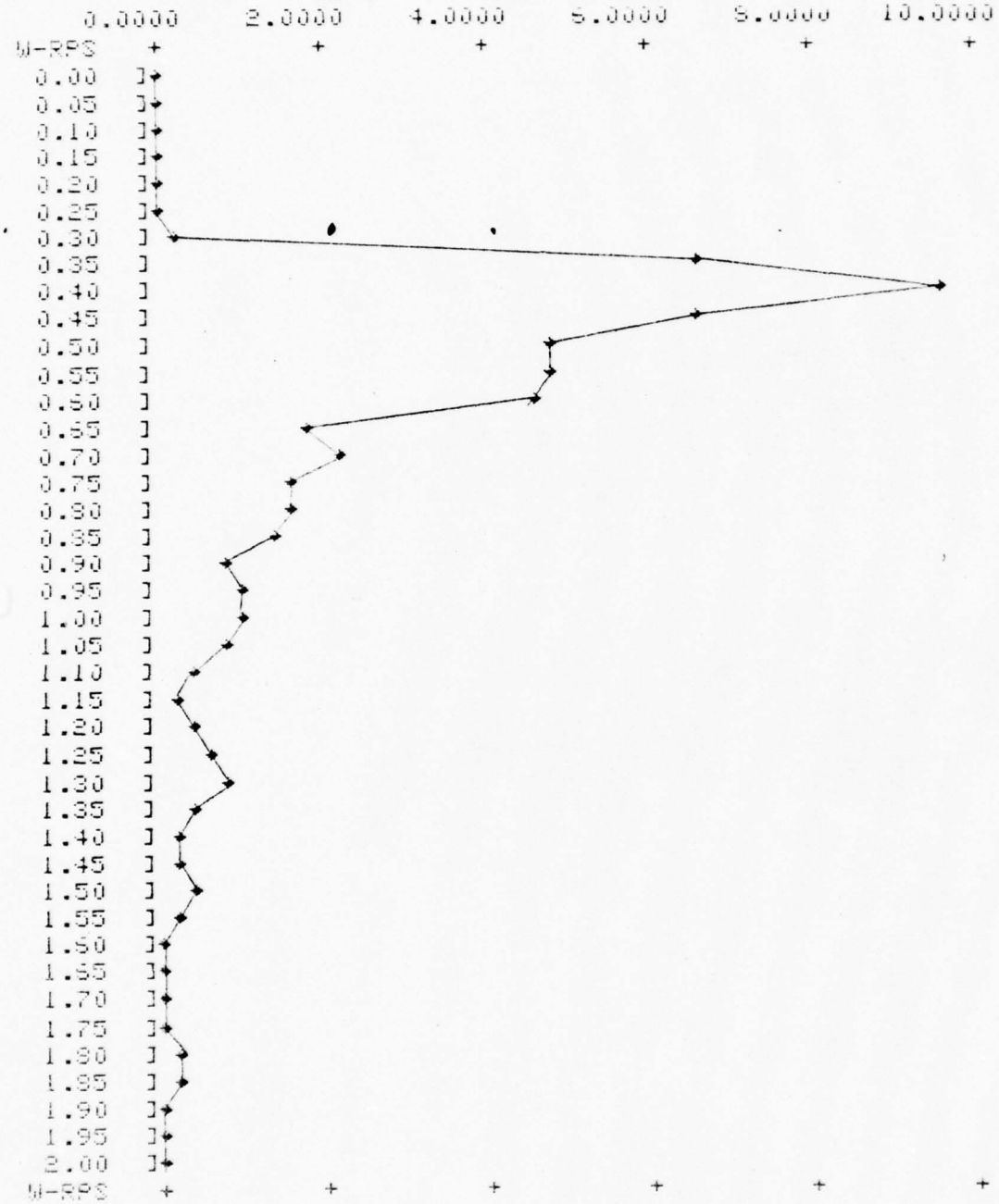


W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0069
0.25	0.0103
0.30	0.0125
0.35	0.0120
0.40	0.0269
0.45	0.1873
0.50	0.3850
0.55	0.9052
0.60	1.0850
0.65	0.7939
0.70	0.7729
0.75	0.6693
0.80	0.5464
0.85	0.5143
0.90	0.4737
0.95	0.2985
1.00	0.2736
1.05	0.1269
1.10	0.1553
1.15	0.2833
1.20	0.3445
1.25	0.2675
1.30	0.0927
1.35	0.0950
1.40	0.1289
1.45	0.1145
1.50	0.1731
1.55	0.2188
1.60	0.2039
1.65	0.0652
1.70	0.0538
1.75	0.0472
1.80	0.0200
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

REPORT 1200 11 03 59 K HATTON 1910 15 11 74 2014

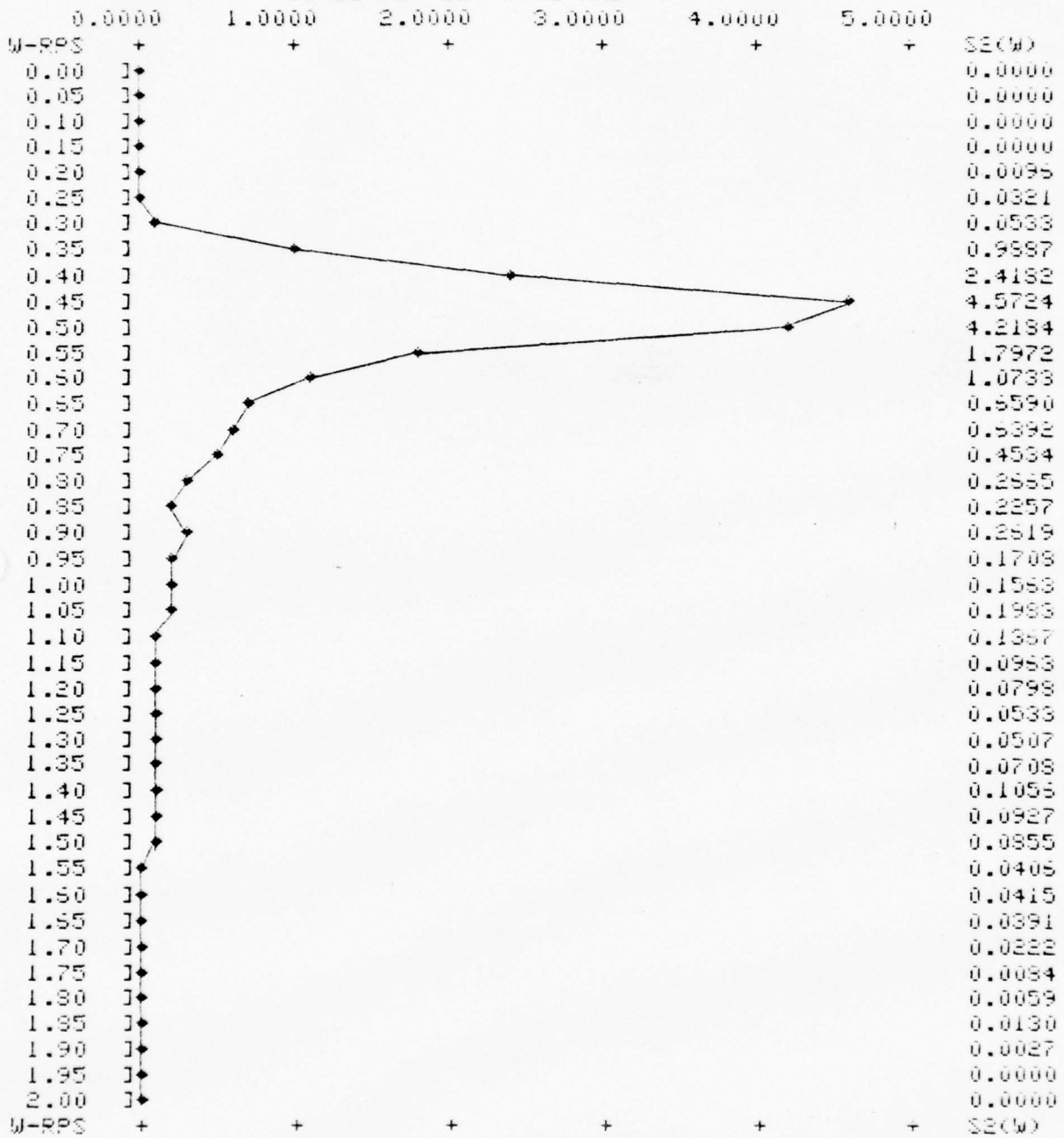
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



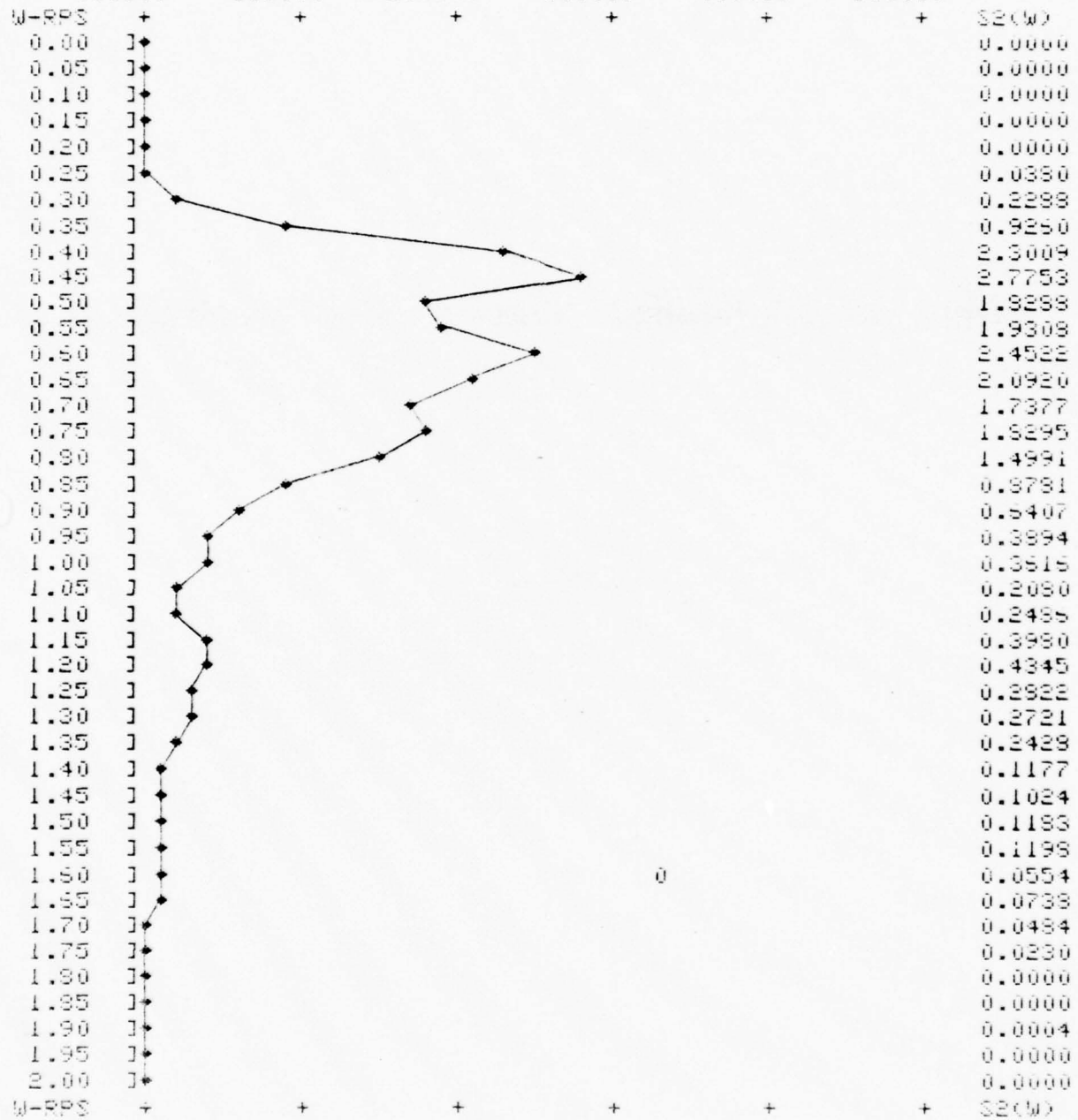
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

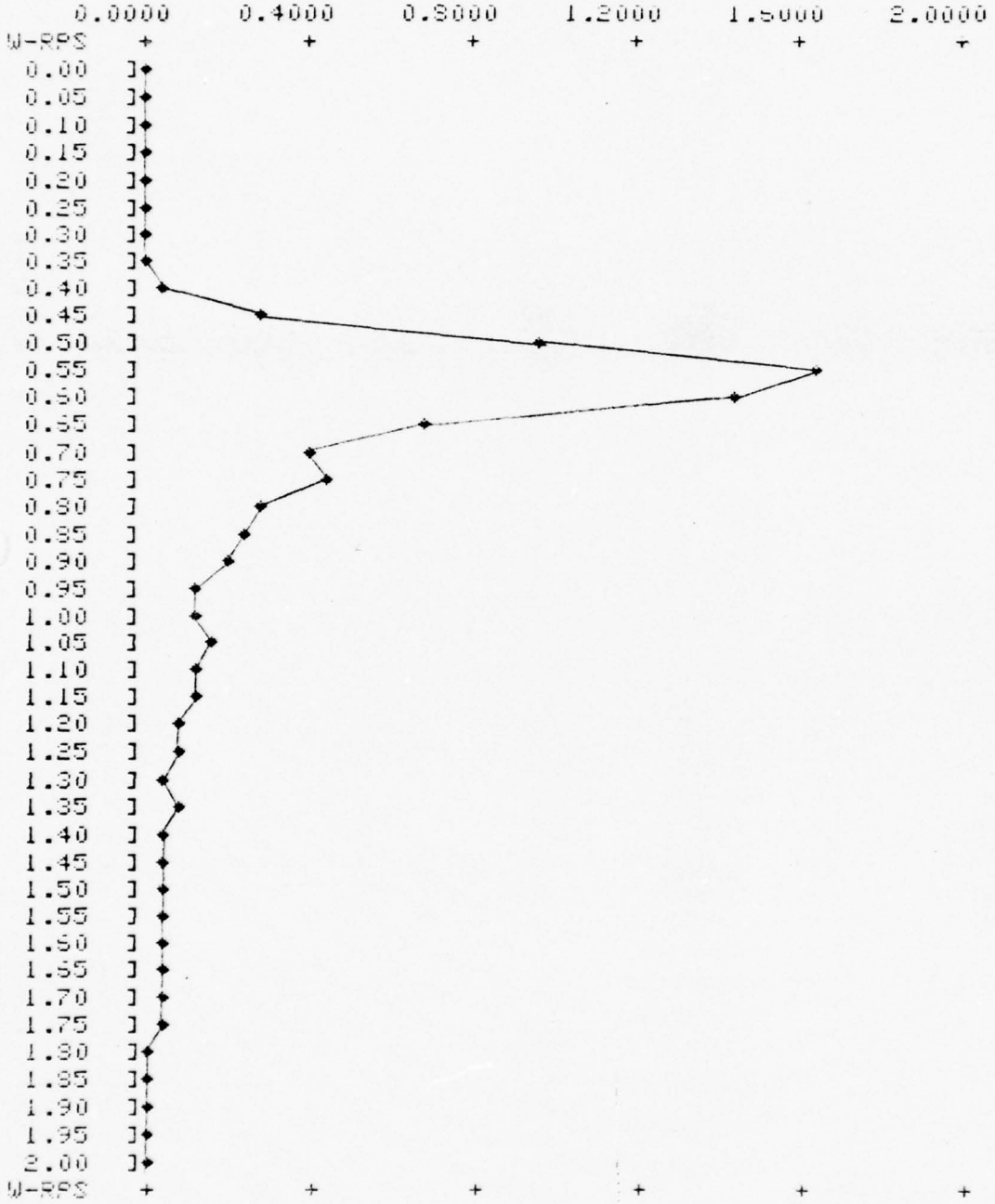
SCALE FOR S2, N**2/RAD



PORT 1200 26 03 59 K HATTON 2010 15 11 74 2017

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0000
0.25	0.0013
0.30	0.0085
0.35	0.0134
0.40	0.0565
0.45	0.2606
0.50	0.9709
0.55	1.8563
0.60	1.4314
0.65	0.5849
0.70	0.4014
0.75	0.4590
0.80	0.2684
0.85	0.2559
0.90	0.2008
0.95	0.1132
1.00	0.1137
1.05	0.1522
1.10	0.1261
1.15	0.1159
1.20	0.0908
1.25	0.0623
1.30	0.0595
1.35	0.0632
1.40	0.0477
1.45	0.0435
1.50	0.0490
1.55	0.0372
1.60	0.0319
1.65	0.0484
1.70	0.0392
1.75	0.0242
1.80	0.0173
1.85	0.0014
1.90	0.0000
1.95	0.0000
2.00	0.0000

REPORT 1200 28 03 59 K VINCE 1355 05 12 74 6005

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

0.0000 2.0000 4.0000 6.0000 8.0000 10.0000

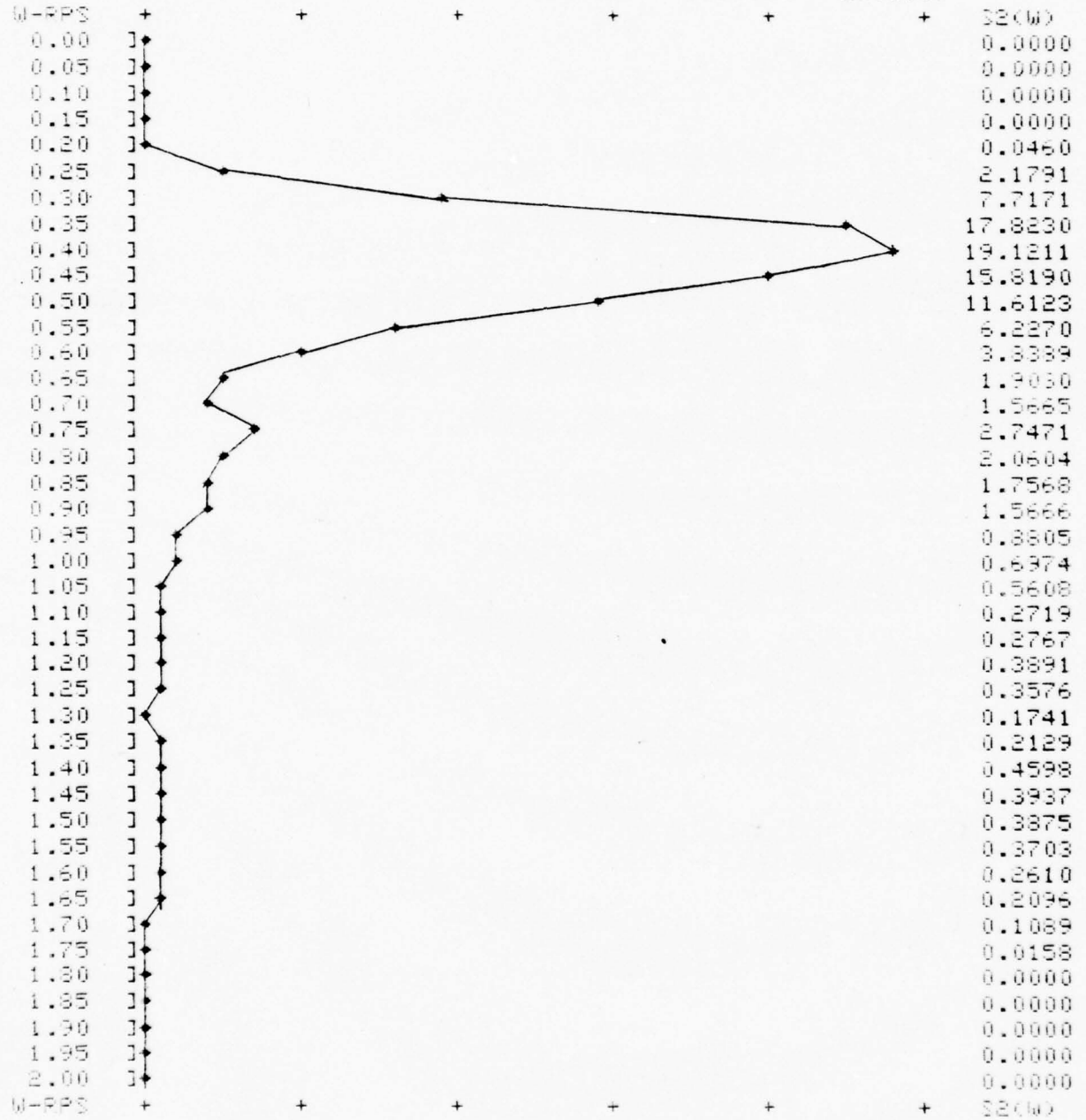
W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0085
0.25	0.0329
0.30	0.1137
0.35	0.2067
0.40	2.8983
0.45	5.4657
0.50	4.7070
0.55	2.6758
0.60	1.3994
0.65	0.9631
0.70	0.5732
0.75	0.4317
0.80	0.4134
0.85	0.2344
0.90	0.2375
0.95	0.2848
1.00	0.1881
1.05	0.1330
1.10	0.1366
1.15	0.1999
1.20	0.1233
1.25	0.1382
1.30	0.1610
1.35	0.1234
1.40	0.1180
1.45	0.0783
1.50	0.1647
1.55	0.2166
1.60	0.0591
1.65	0.0632
1.70	0.0798
1.75	0.0507
1.80	0.0000
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

W-RPS S2(W)

REPORT 1200 89 03 59 K VINCE 1600 04 12 74 5002

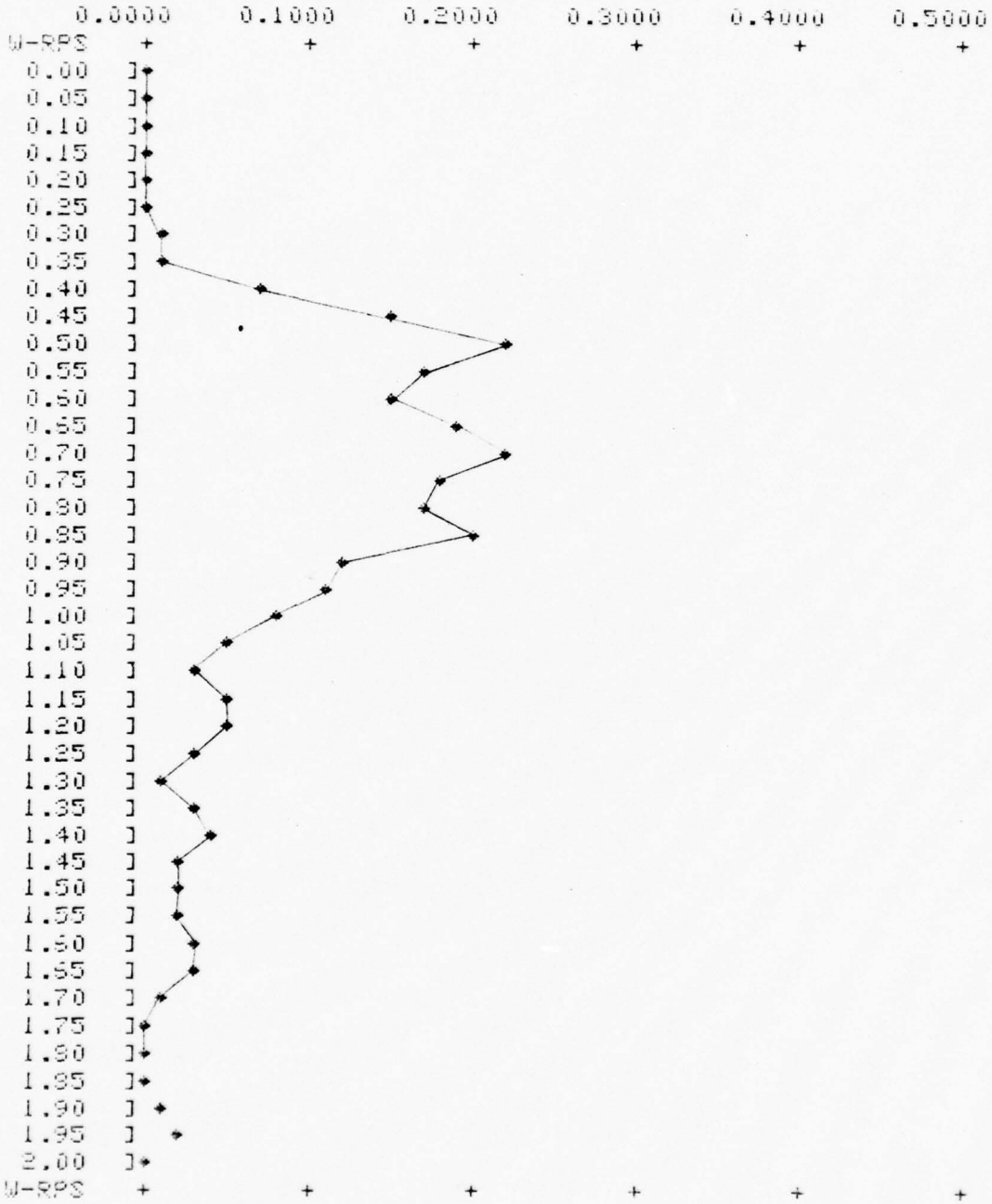
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



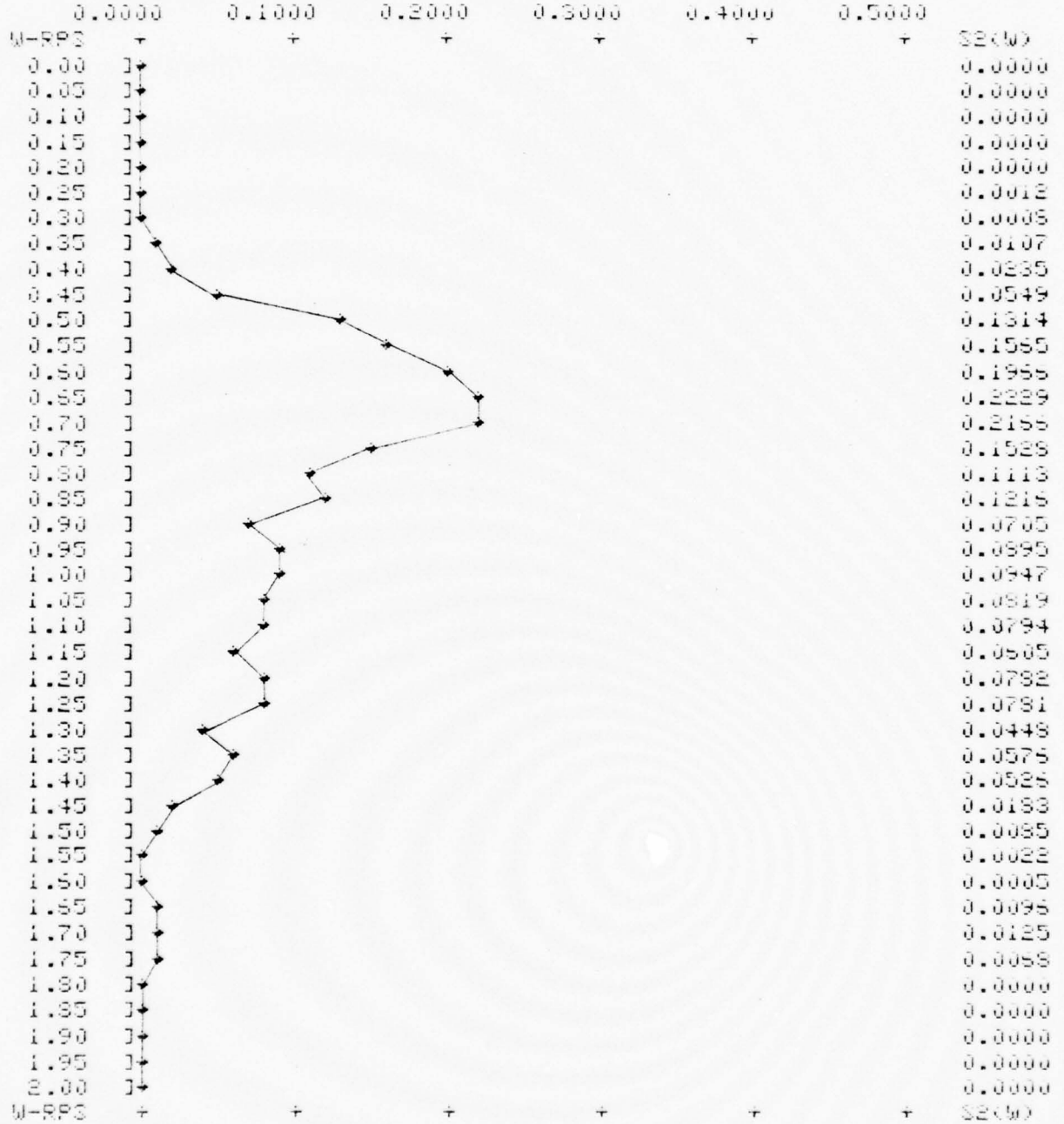
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



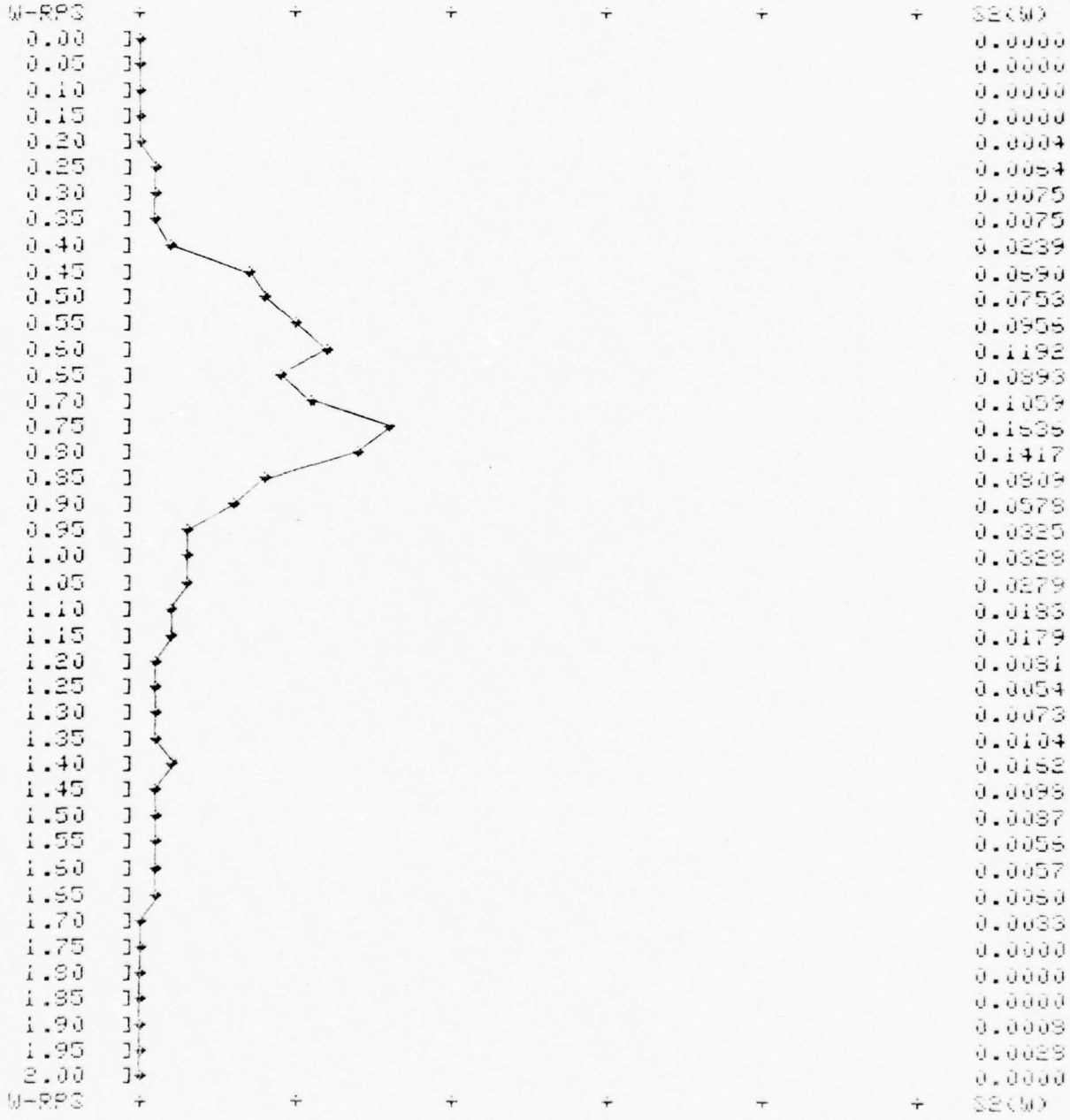
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



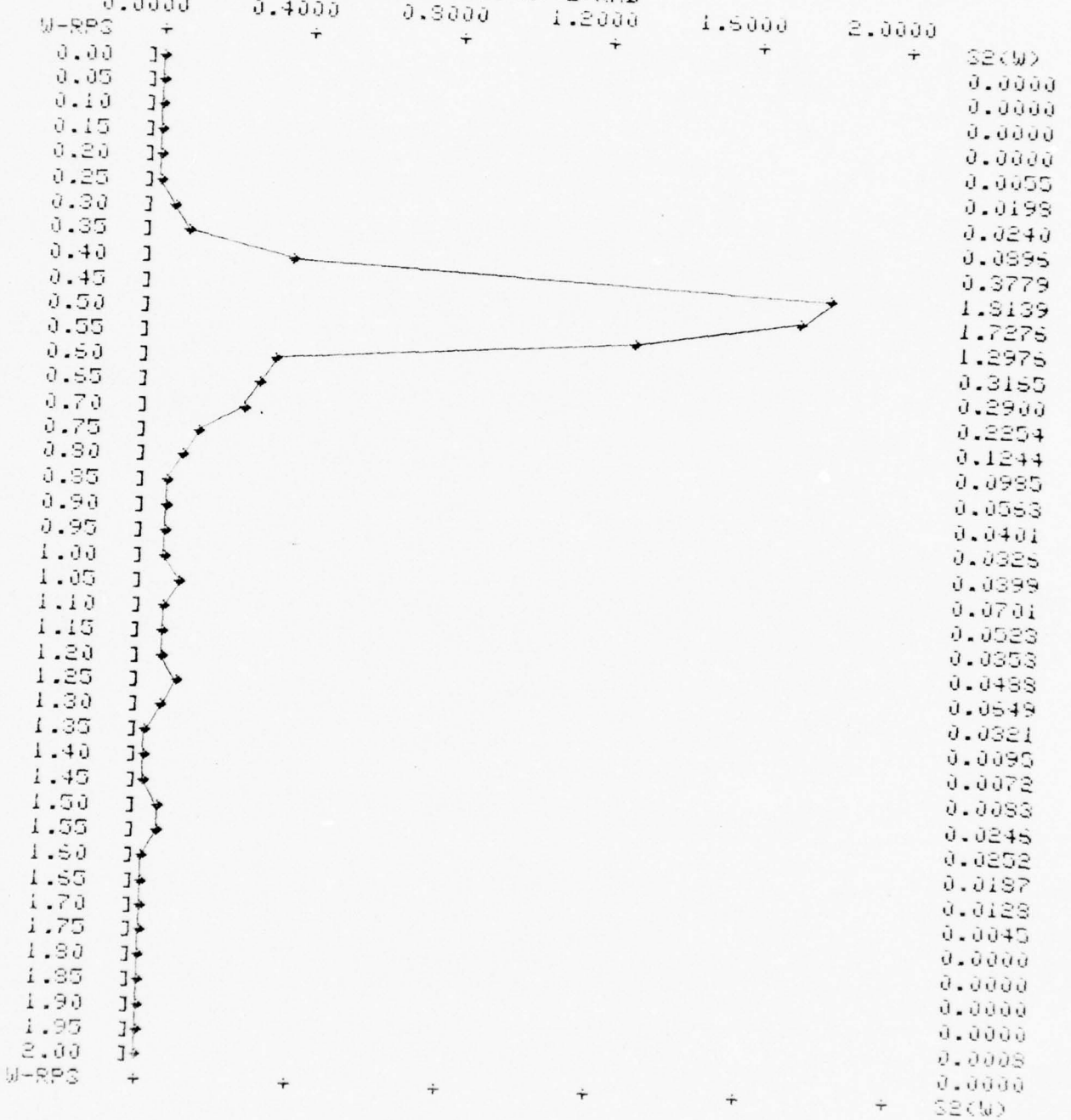
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



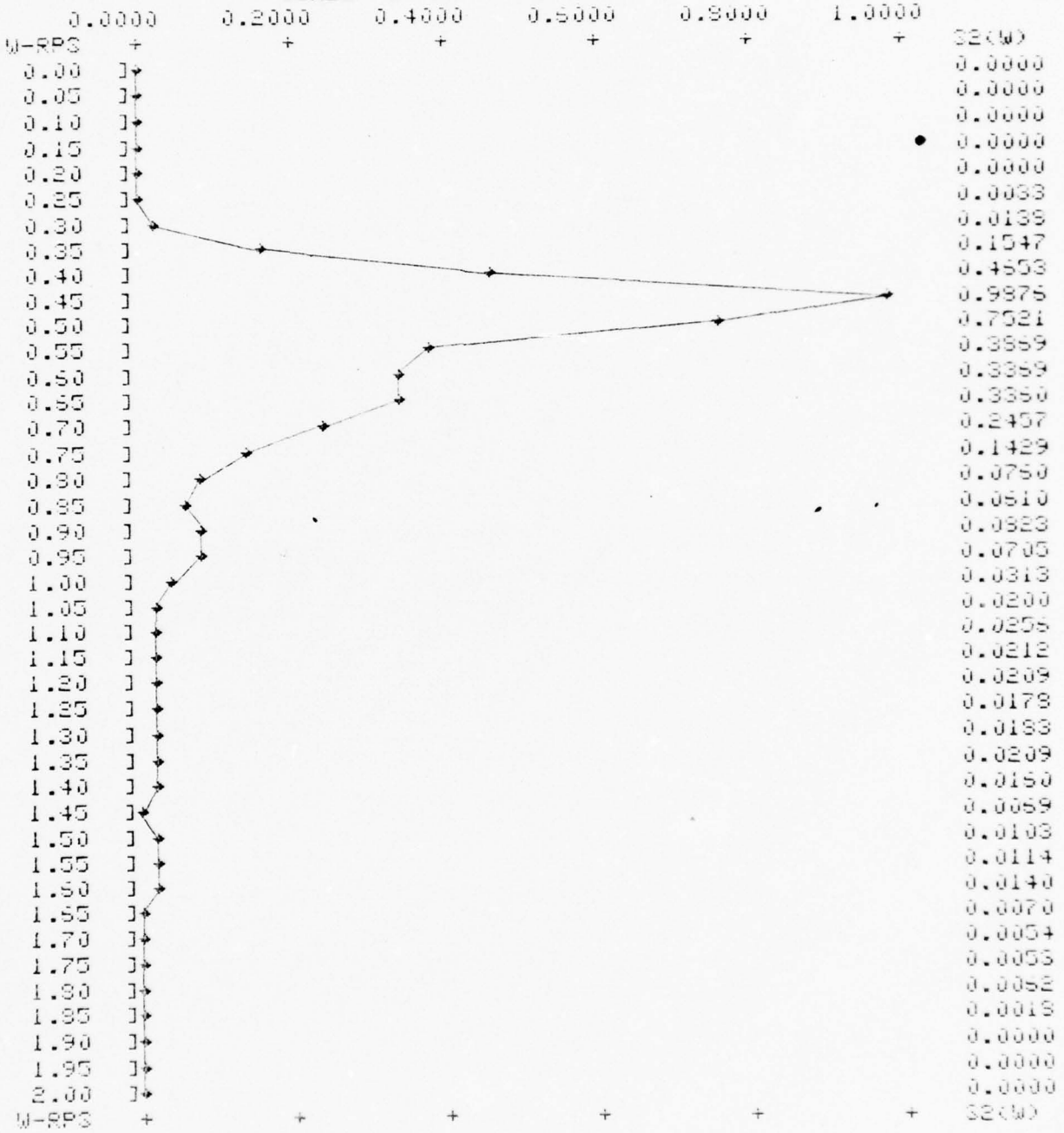
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



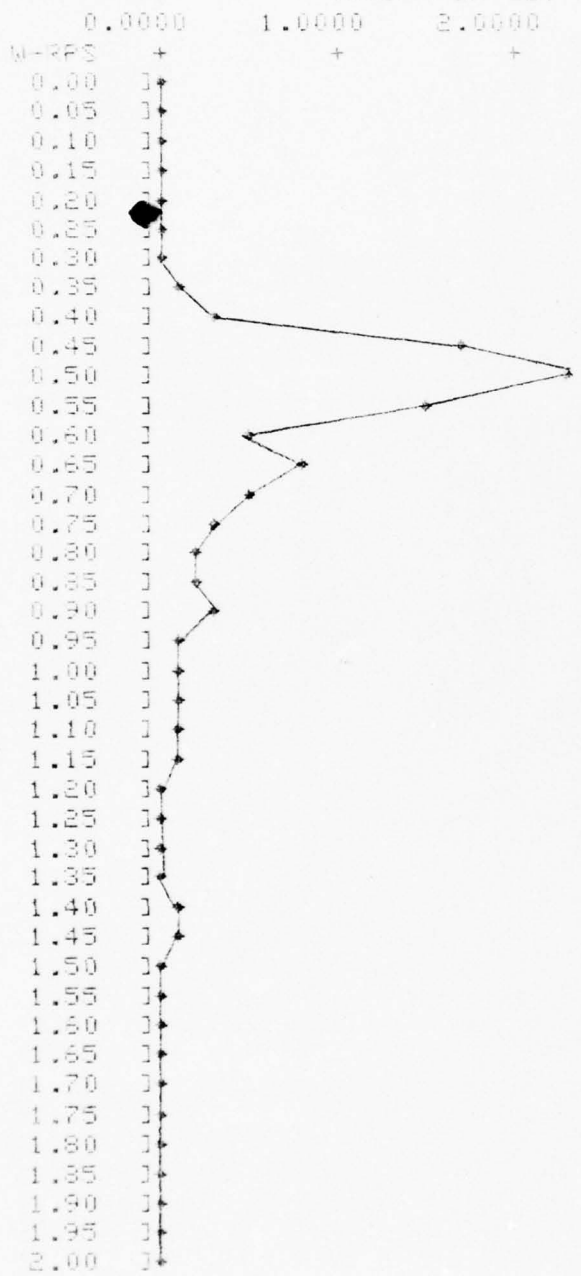
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2: M**2/RAD

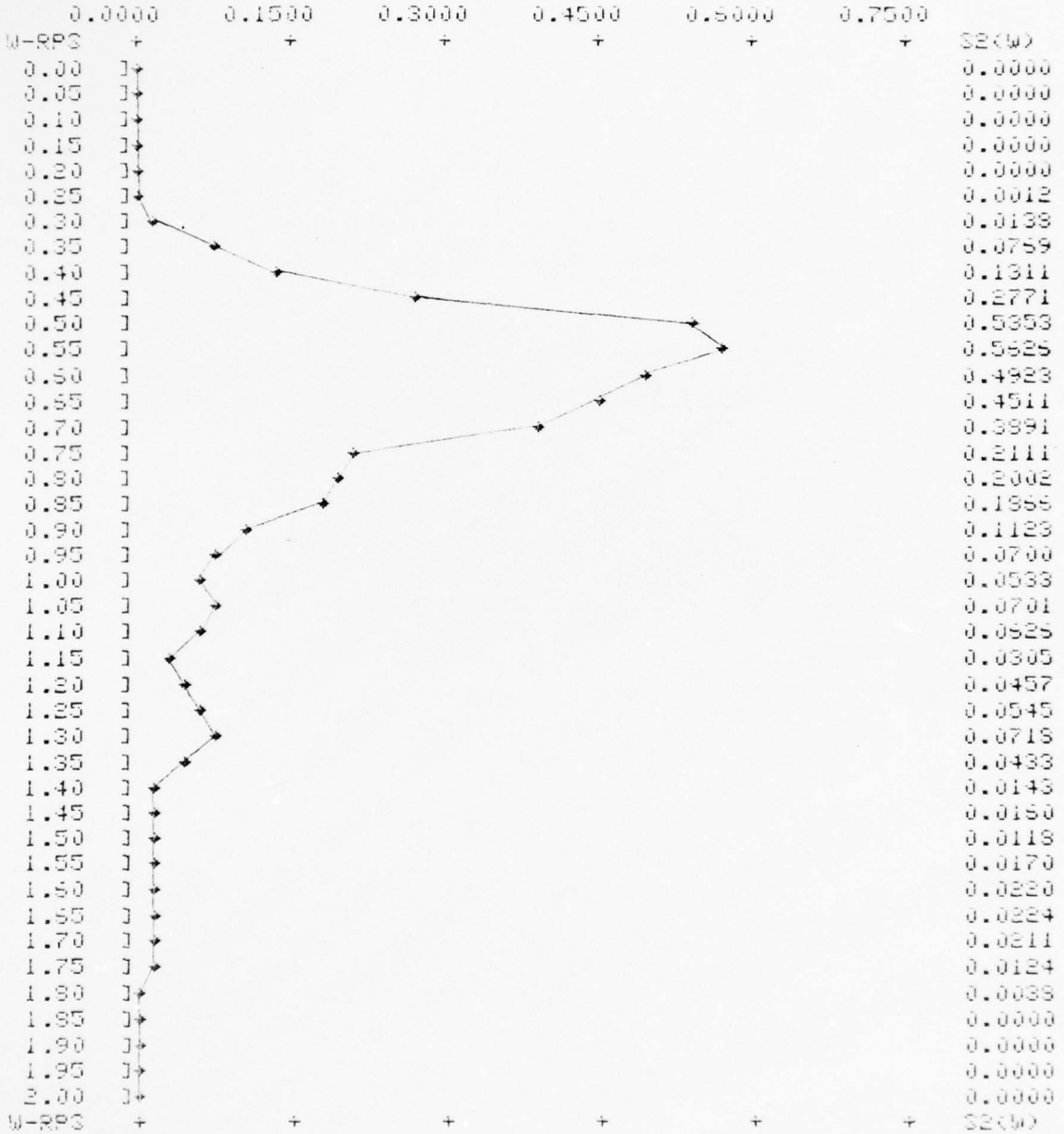


W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0000
0.25	0.0083
0.30	0.0222
0.35	0.0567
0.40	0.2965
0.45	1.6815
0.50	2.3156
0.55	1.4501
0.60	0.5439
0.65	0.7891
0.70	0.5689
0.75	0.3106
0.80	0.1703
0.85	0.2327
0.90	0.2566
0.95	0.1265
1.00	0.0825
1.05	0.0587
1.10	0.1047
1.15	0.0794
1.20	0.0434
1.25	0.0366
1.30	0.0272
1.35	0.0373
1.40	0.0669
1.45	0.0784
1.50	0.0343
1.55	0.0000
1.60	0.0000
1.65	0.0000
1.70	0.0032
1.75	0.0203
1.80	0.0226
1.85	0.0072
1.90	0.0000
1.95	0.0000
2.00	0.0000

W-RPS S2(W)

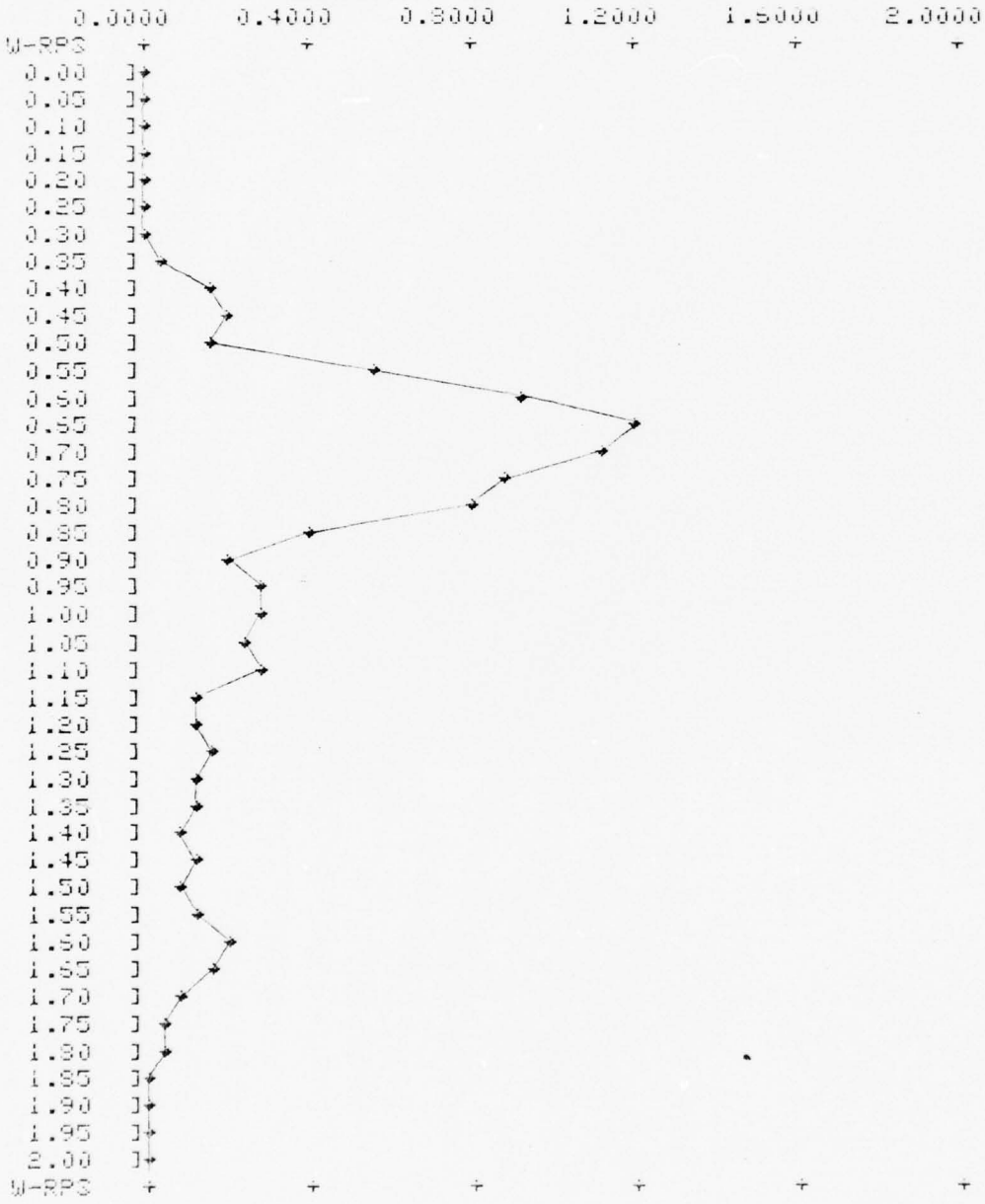
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

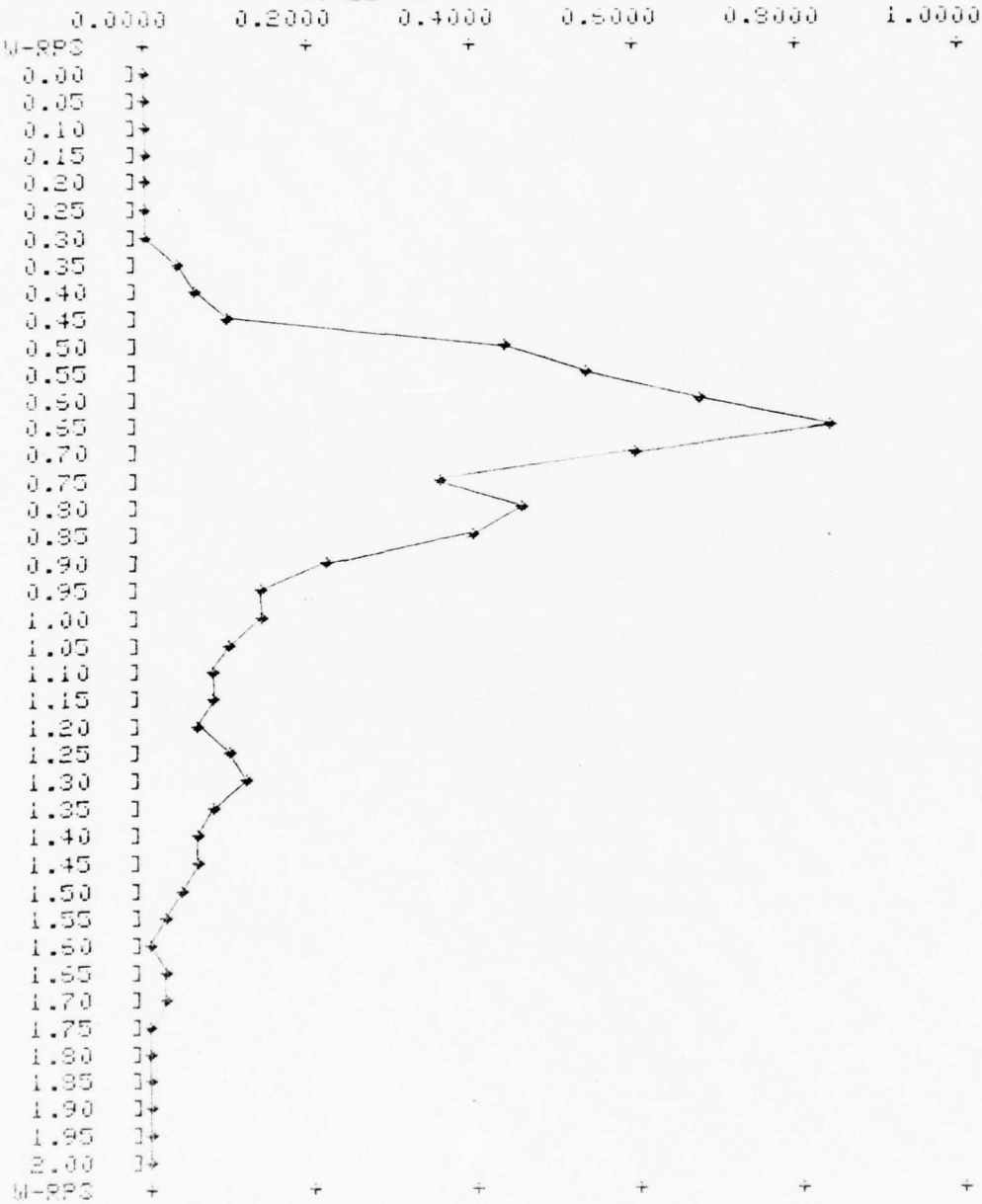
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0000
0.25	0.0000
0.30	0.0000
0.35	0.0285
0.40	0.1461
0.45	0.1892
0.50	0.1757
0.55	0.5712
0.60	0.9296
0.65	1.1831
0.70	1.1220
0.75	0.9839
0.80	0.7801
0.85	0.4163
0.90	0.2134
0.95	0.2996
1.00	0.2879
1.05	0.2594
1.10	0.2629
1.15	0.1270
1.20	0.1161
1.25	0.1495
1.30	0.1315
1.35	0.1019
1.40	0.0765
1.45	0.1073
1.50	0.0936
1.55	0.1292
1.60	0.1868
1.65	0.1533
1.70	0.0720
1.75	0.0373
1.80	0.0207
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000
W-RPS	S2(W)

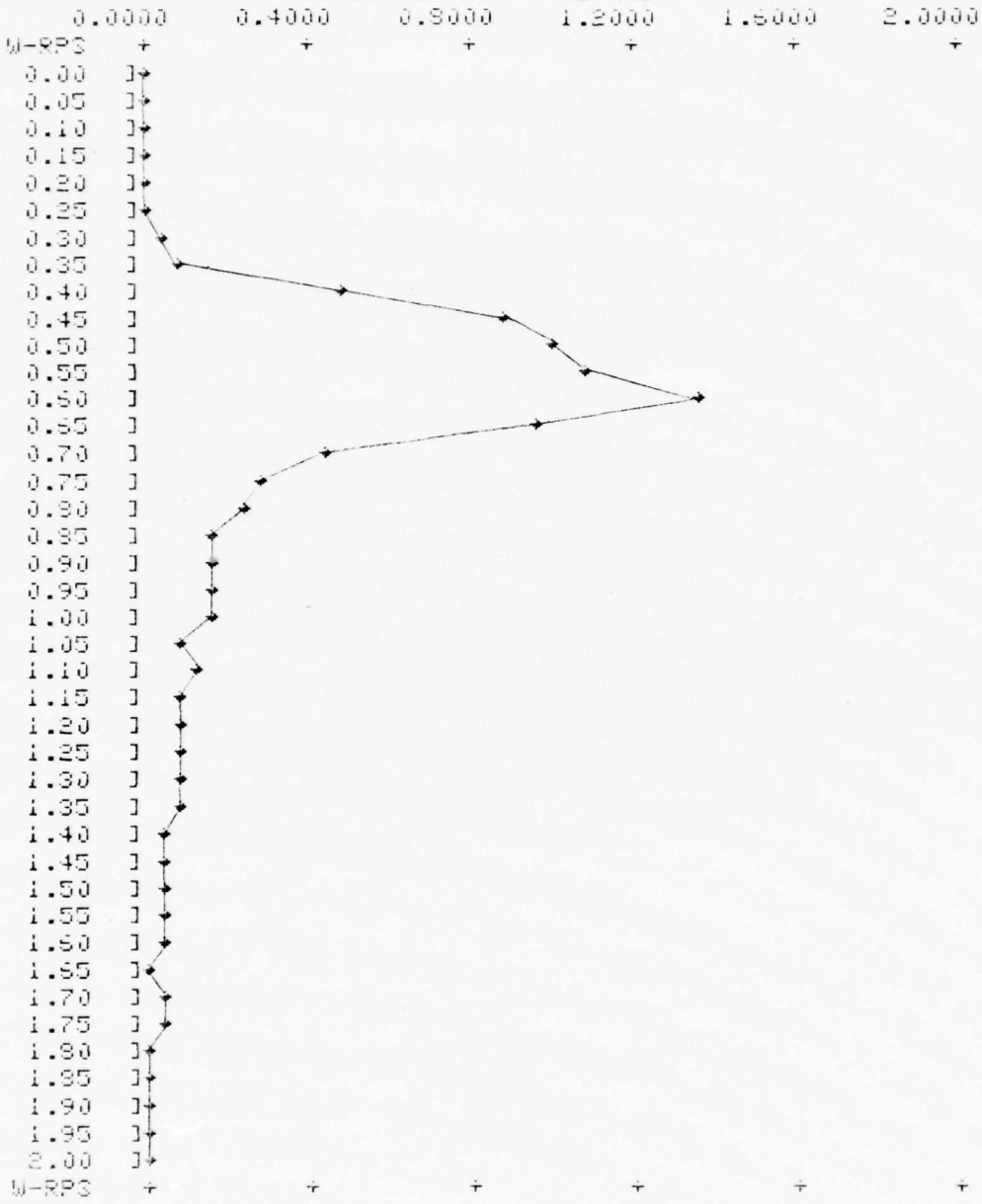
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



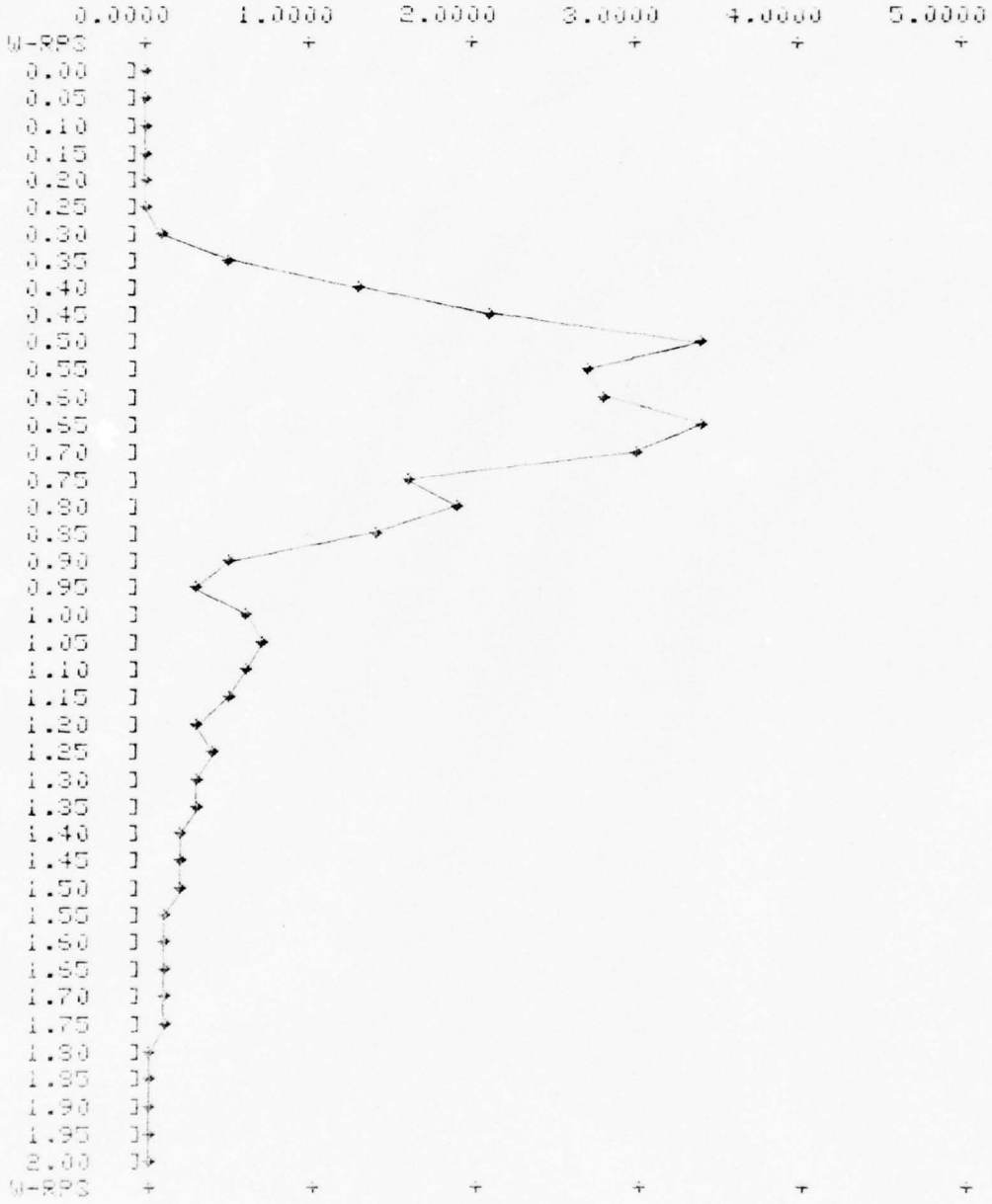
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



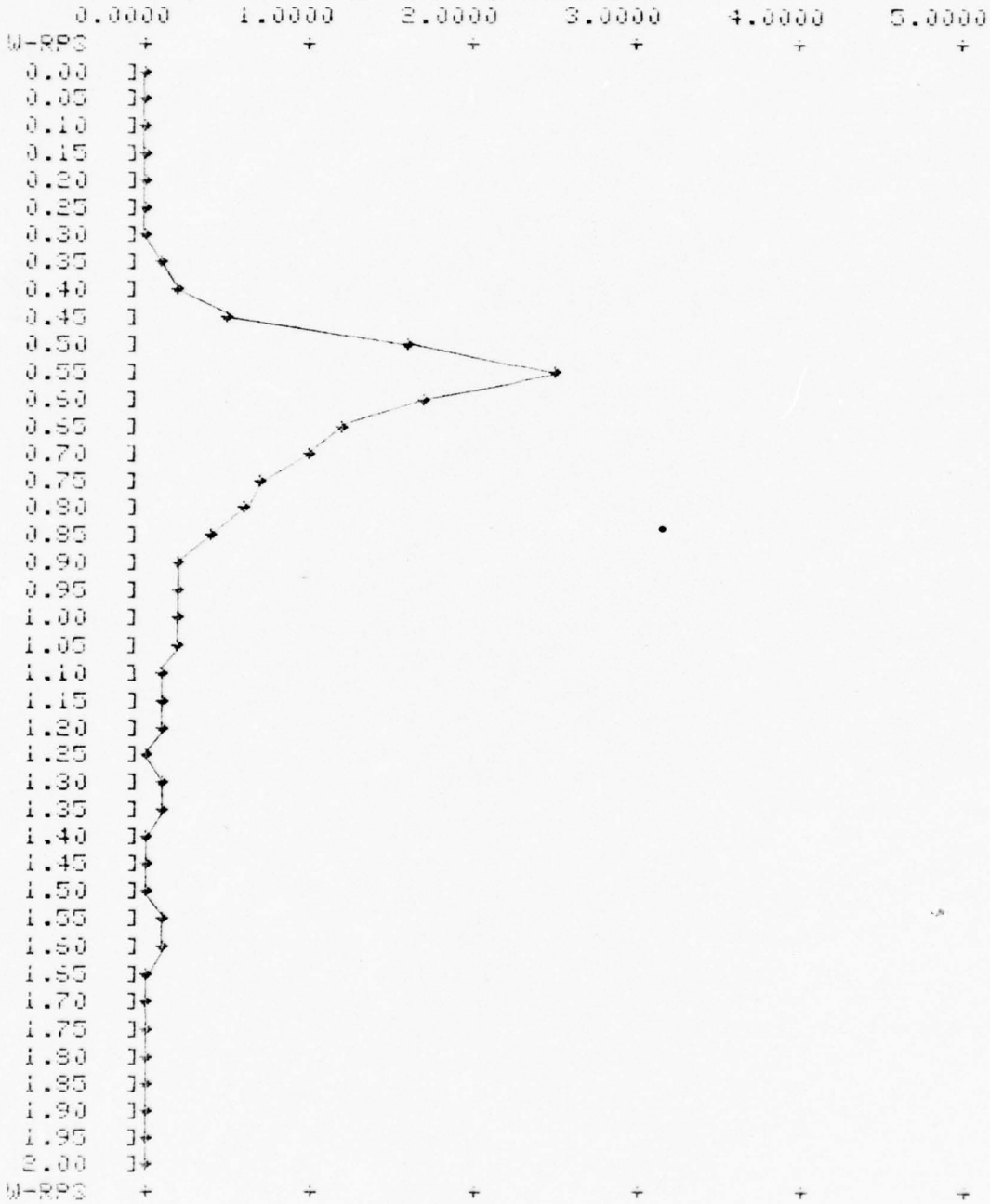
PLOT OF S2 VS. W

SCALE FOR S2: M**2/RAD



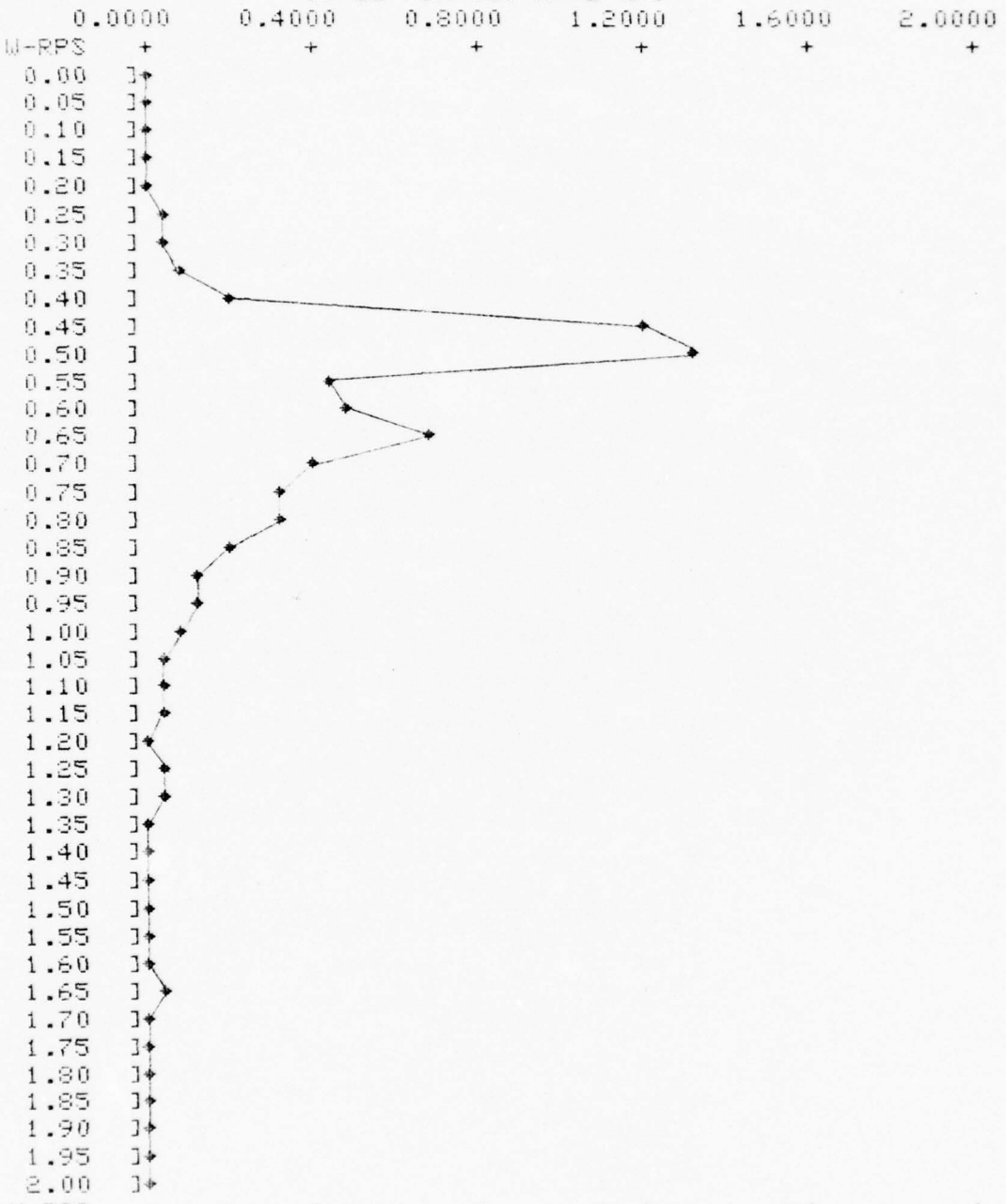
PLOT OF S2 VS. W

SCALE FOR S2, M↔2/RAD



PLOT OF S2 VS. W

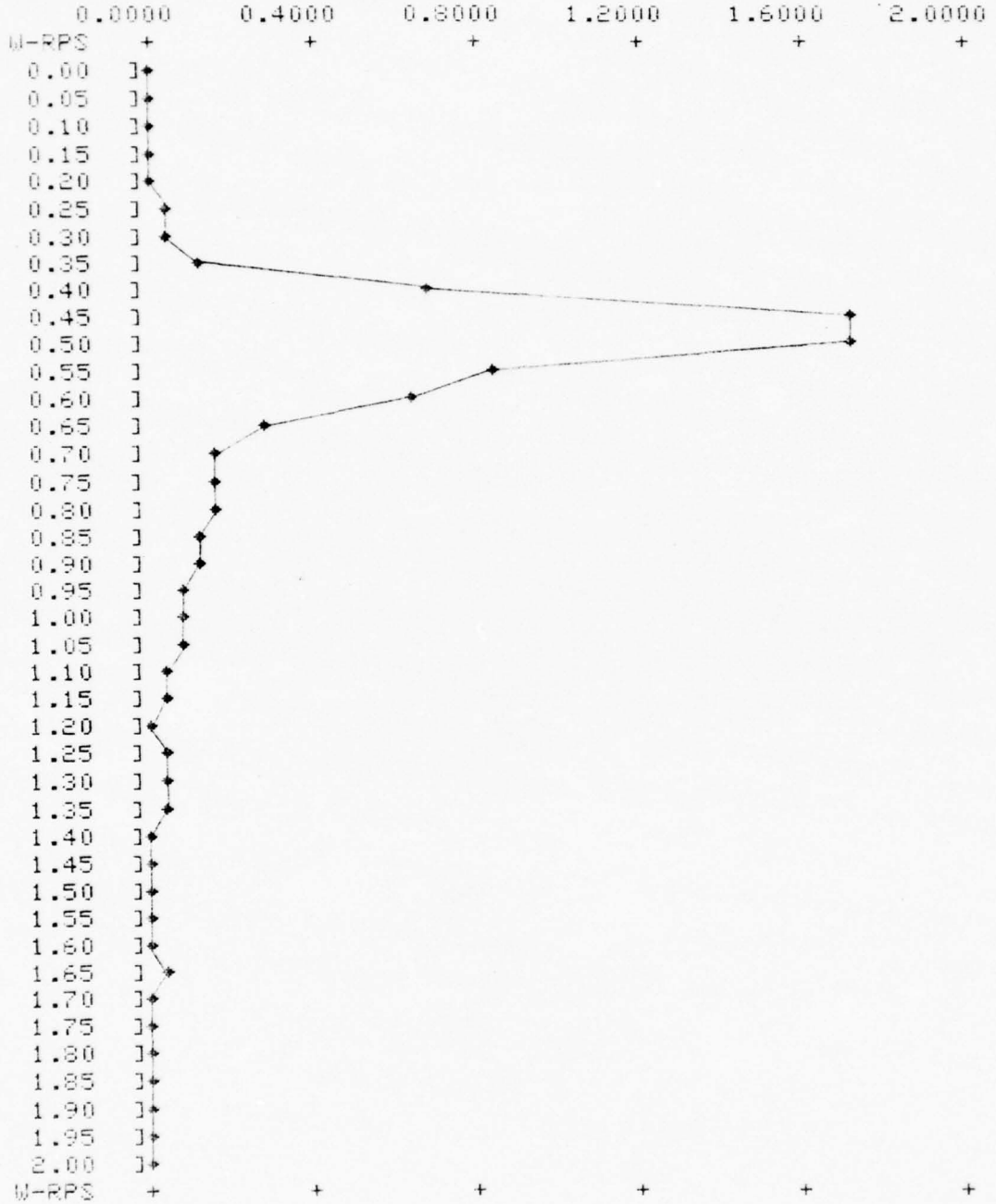
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0044
0.25	0.0322
0.30	0.0464
0.35	0.0640
0.40	0.2070
0.45	1.2196
0.50	1.3332
0.55	0.4546
0.60	0.4634
0.65	0.6655
0.70	0.4087
0.75	0.3015
0.80	0.3008
0.85	0.1929
0.90	0.1295
0.95	0.1251
1.00	0.0986
1.05	0.0356
1.10	0.0480
1.15	0.0297
1.20	0.0079
1.25	0.0240
1.30	0.0358
1.35	0.0156
1.40	0.0165
1.45	0.0064
1.50	0.0000
1.55	0.0035
1.60	0.0099
1.65	0.0205
1.70	0.0158
1.75	0.0140
1.80	0.0107
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

PLOT OF S2 VS. W

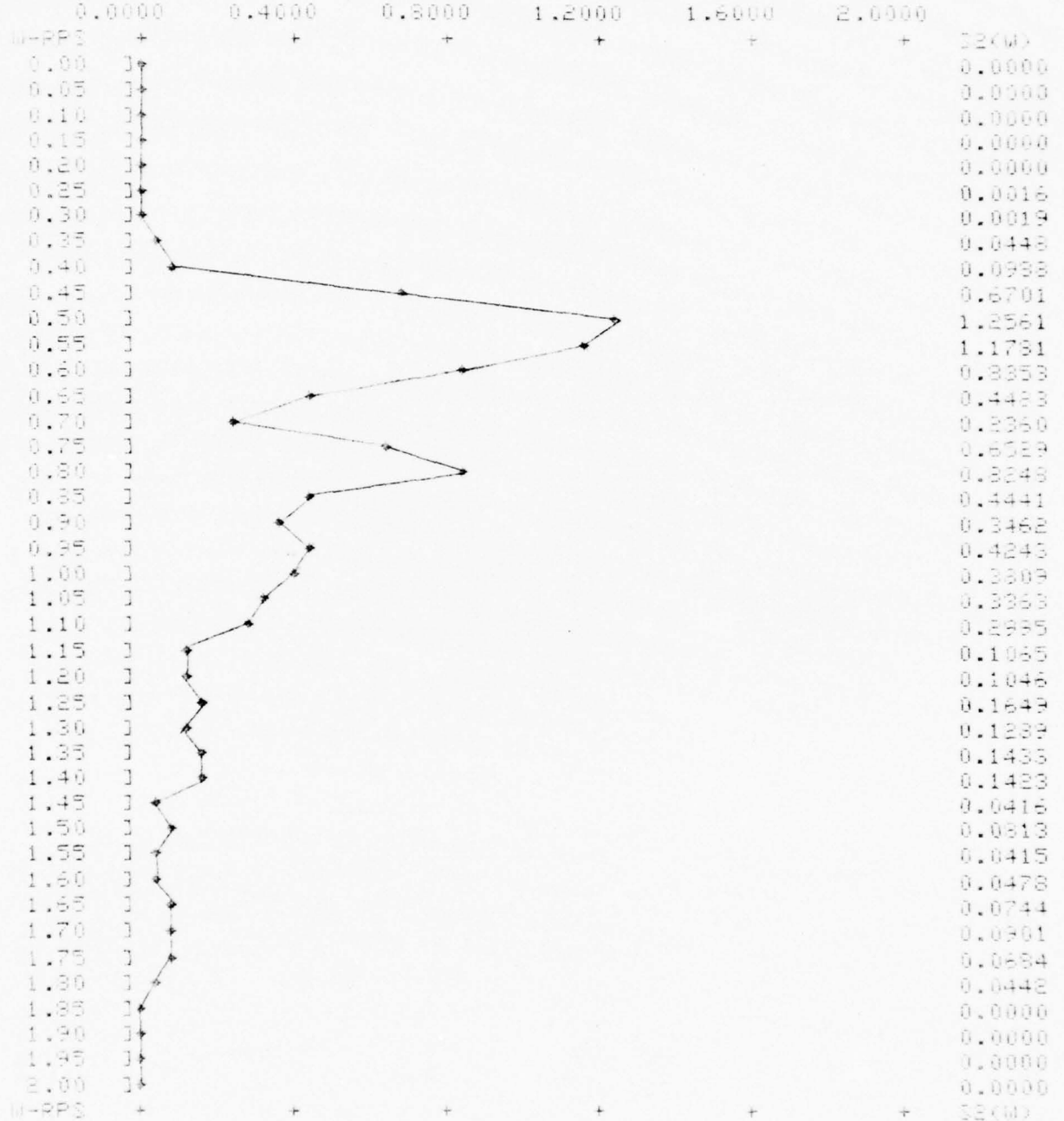
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0026
0.25	0.0220
0.30	0.0527
0.35	0.1151
0.40	0.6904
0.45	1.7138
0.50	1.7294
0.55	0.8406
0.60	0.6460
0.65	0.2938
0.70	0.1713
0.75	0.1546
0.80	0.1419
0.85	0.1006
0.90	0.1089
0.95	0.0676
1.00	0.0619
1.05	0.0611
1.10	0.0307
1.15	0.0331
1.20	0.0198
1.25	0.0301
1.30	0.0382
1.35	0.0330
1.40	0.0152
1.45	0.0161
1.50	0.0118
1.55	0.0042
1.60	0.0151
1.65	0.0215
1.70	0.0083
1.75	0.0047
1.80	0.0079
1.85	0.0062
1.90	0.0000
1.95	0.0000
2.00	0.0000

PLOT OF S2 VS. W

SCALE FOR S2: M**2/RAD



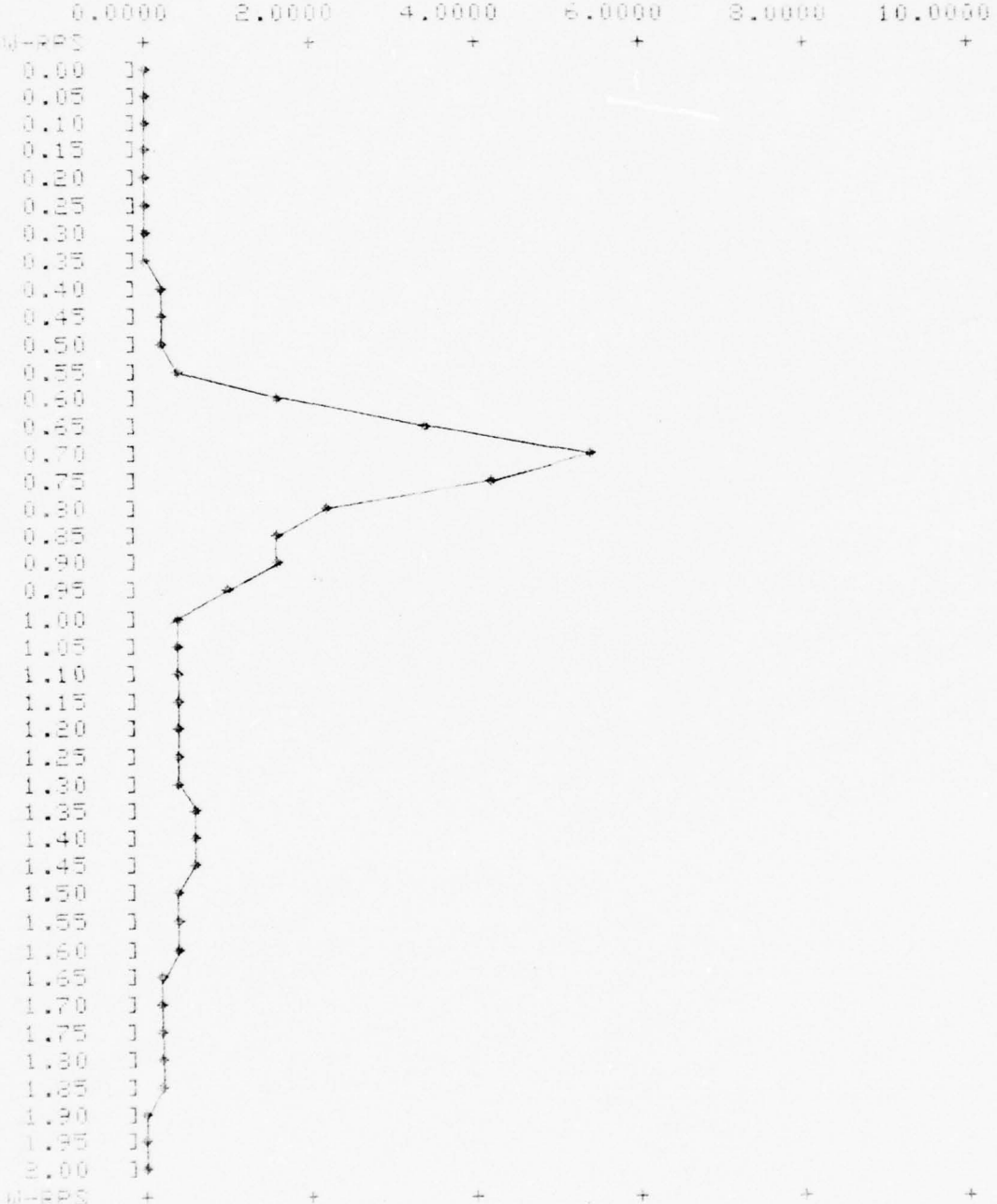
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

W-RPS	0.0000	0.1000	0.2000	0.3000	0.4000	0.5000	S2(W)
0.00	]						0.0000
0.05	]						0.0000
0.10	]						0.0000
0.15	]						0.0000
0.20	]						0.0015
0.25	]						0.0028
0.30	]						0.0293
0.35	]						0.0784
0.40	]						0.0686
0.45	]						0.0567
0.50	]						0.1282
0.55	]						0.2053
0.60	]						0.3946
0.65	]						0.3486
0.70	]						0.1796
0.75	]						0.1772
0.80	]						0.1581
0.85	]						0.1238
0.90	]						0.1247
0.95	]						0.0765
1.00	]						0.0330
1.05	]						0.0484
1.10	]						0.0319
1.15	]						0.0266
1.20	]						0.0267
1.25	]						0.0238
1.30	]						0.0321
1.35	]						0.0242
1.40	]						0.0187
1.45	]						0.0267
1.50	]						0.0217
1.55	]						0.0259
1.60	]						0.0173
1.65	]						0.0080
1.70	]						0.0041
1.75	]						0.0059
1.80	]						0.0119
1.85	]						0.0063
1.90	]						0.0000
1.95	]						0.0000
2.00	]						0.0000
W-RPS							S2(W)

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0045
0.25	0.0623
0.30	0.0717
0.35	0.0911
0.40	0.2014
0.45	0.1651
0.50	0.1311
0.55	0.4347
0.60	1.6603
0.65	3.4654
0.70	5.3638
0.75	4.2249
0.80	2.1958
0.85	1.5521
0.90	1.5287
0.95	0.3678
1.00	0.4115
1.05	0.4681
1.10	0.4008
1.15	0.3930
1.20	0.4659
1.25	0.4752
1.30	0.4194
1.35	0.6036
1.40	0.5274
1.45	0.5189
1.50	0.3177
1.55	0.3753
1.60	0.4001
1.65	0.2275
1.70	0.1352
1.75	0.1933
1.80	0.2353
1.85	0.1236
1.90	0.0000
1.95	0.0000
2.00	0.0000

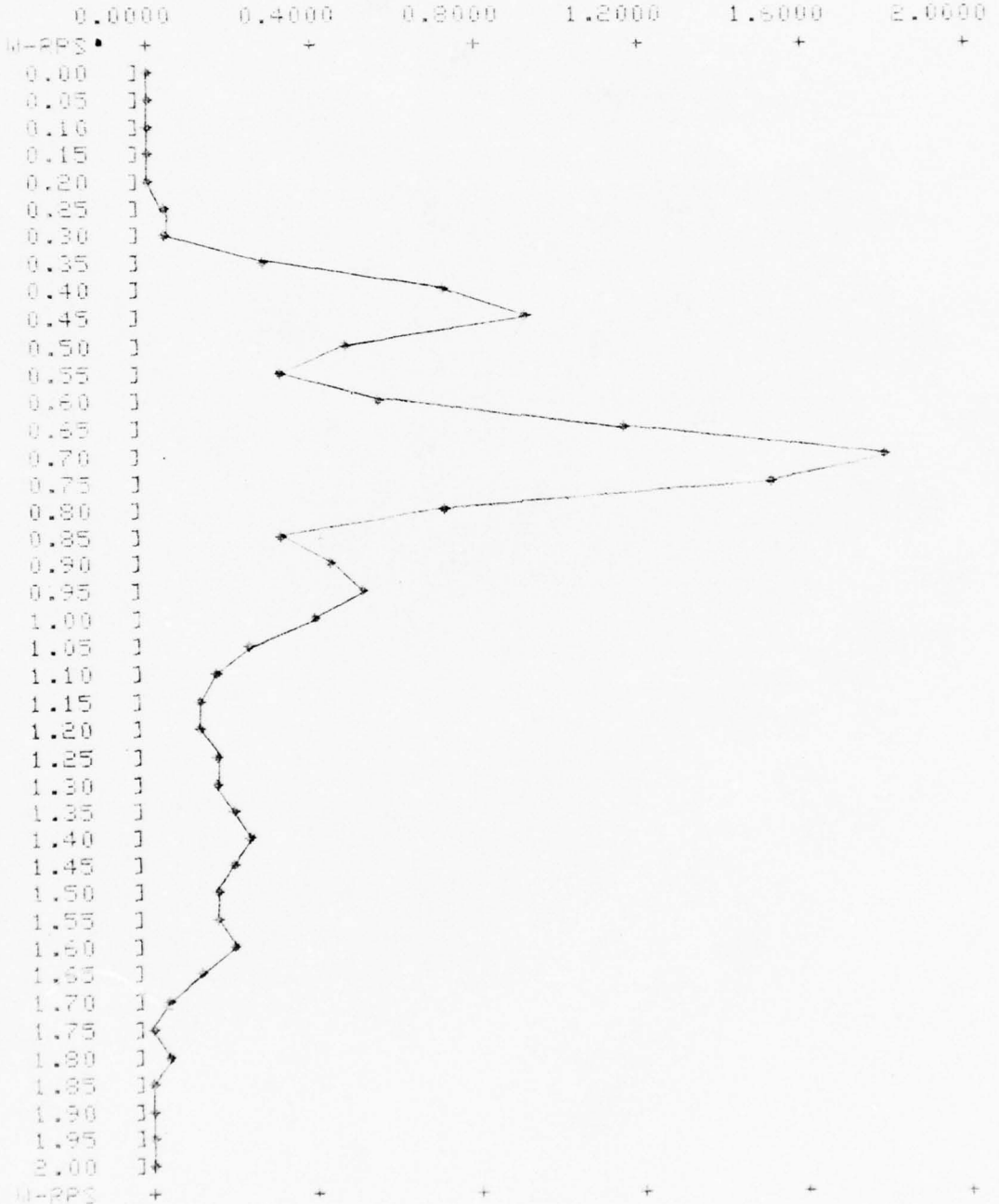
W-RPS S2(W)

VARIANCE= 0.2743 M**2 SIG. WAVE HGT.= 2.0560 M.
NOISE LEVEL= 0.0030 M**2/RPS CUT-OFF= 0.2250 RPS
T(-1)= 6.8853 SEC T(1)= 8.0046 SEC T(2)= 7.5045 SEC

N	W RPS	I0 M**2/RPS	I1 M**2/RPS	I2 M**2/RPS
0	0.00	0.0000	0.0000	0.0000
1	0.05	0.0000	0.0000	0.0000
2	0.10	0.0000	0.0000	0.0000
3	0.15	0.0000	0.0000	0.0000
4	0.20	0.0007	0.0000	0.0000
5	0.25	0.0063	0.0033	0.0042
6	0.30	0.0125	0.0085	0.0109
7	0.35	0.0141	0.0111	0.0113
8	0.40	0.0401	0.0370	0.0388
9	0.45	0.0736	0.0735	0.0744
10	0.50	0.2121	0.2091	0.2176
11	0.55	0.5768	0.5737	0.6072
12	0.60	0.8683	0.8652	0.9510
13	0.65	0.7592	0.7561	0.8788
14	0.70	0.3871	0.3841	0.4727
15	0.75	0.2535	0.2535	0.3308
16	0.80	0.2859	0.2829	0.3973
17	0.85	0.1139	0.1109	0.1681
18	0.90	0.0933	0.0892	0.1470
19	0.95	0.0756	0.0726	0.1305
20	1.00	0.0463	0.0453	0.0855
21	1.05	0.0436	0.0406	0.0886
22	1.10	0.0339	0.0309	0.0749
23	1.15	0.0160	0.0129	0.0351
24	1.20	0.0393	0.0262	0.0783
25	1.25	0.0322	0.0291	0.1001
26	1.30	0.0181	0.0151	0.0583
27	1.35	0.0213	0.0182	0.0810
28	1.40	0.0223	0.0193	0.0953
29	1.45	0.0165	0.0134	0.0739
30	1.50	0.0140	0.0110	0.0747
31	1.55	0.0088	0.0058	0.0459
32	1.60	0.0072	0.0042	0.0385
33	1.65	0.0087	0.0056	0.0614
34	1.70	0.0051	0.0023	0.0301
35	1.75	0.0027	0.0001	0.0022
36	1.80	0.0023	0.0000	0.0000
37	1.85	0.0027	0.0000	0.0000
38	1.90	0.0029	0.0000	0.0000
39	1.95	0.0031	0.0000	0.0000
40	2.00	0.0022	0.0000	0.0000

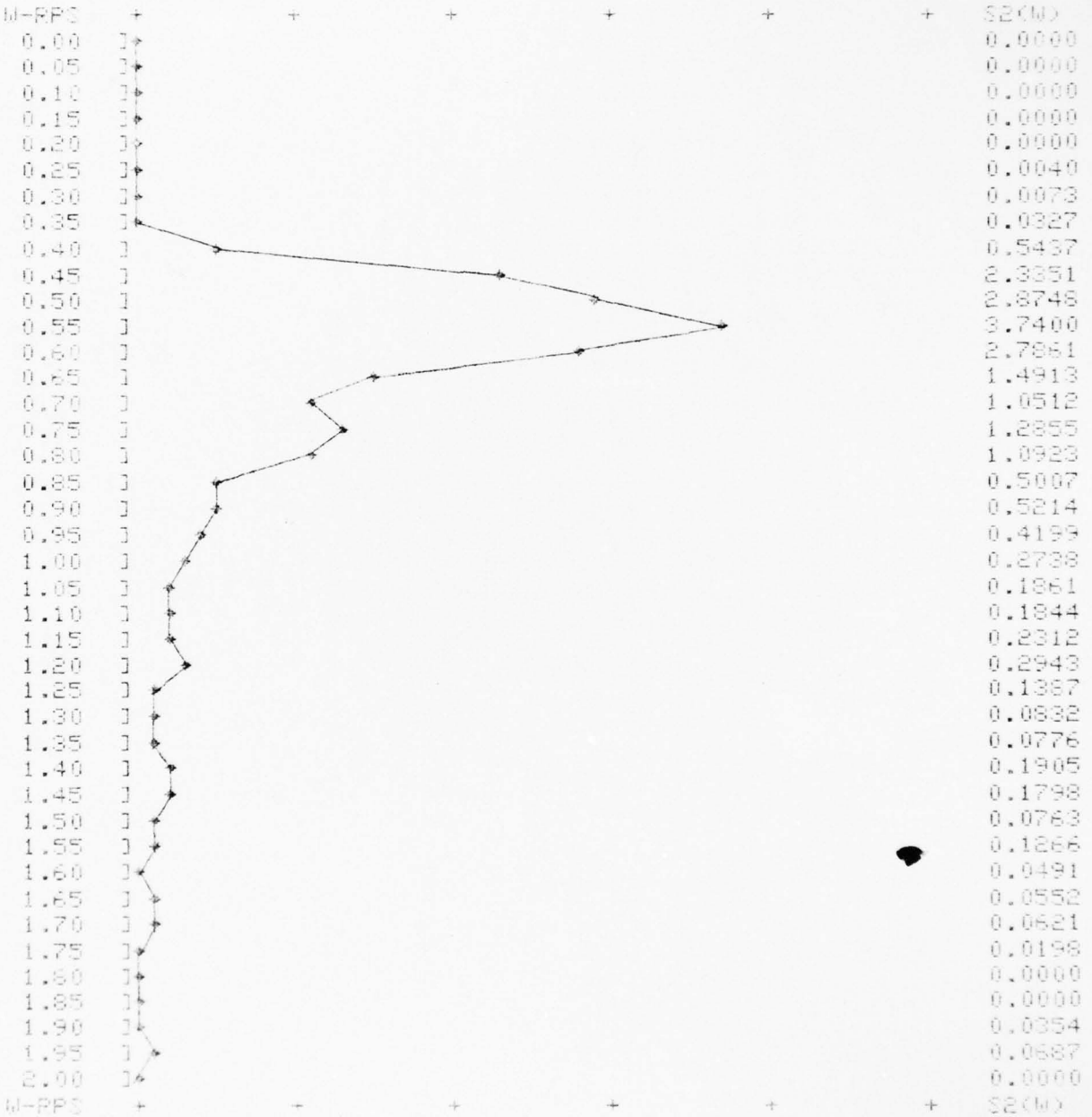
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

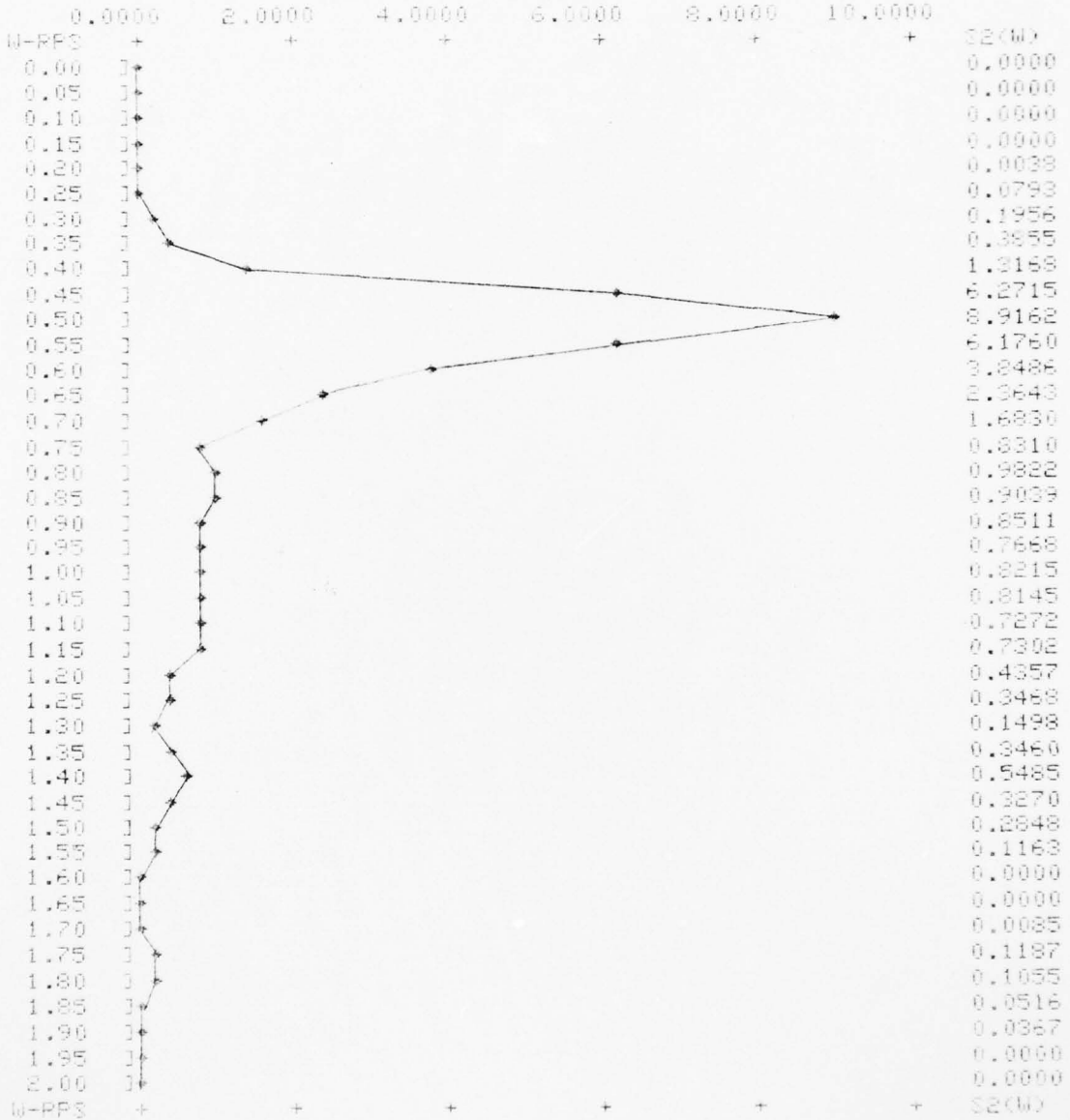
SCALE FOR S2: M**2/RAD

W-RPS	0.0000 3.0000 6.0000 9.0000 12.0000 15.0000	S2(W)
0.00	]	0.0000
0.05	]	0.0000
0.10	]	0.0000
0.15	]	0.0000
0.20	]	0.0000
0.25	]	0.0809
0.30	]	0.3807
0.35	]	1.5056
0.40	]	10.6653
0.45	]	12.4306
0.50	]	8.6042
0.55	]	10.4135
0.60	]	7.2478
0.65	]	3.8683
0.70	]	3.6663
0.75	]	1.4375
0.80	]	1.6516
0.85	]	1.9320
0.90	]	1.6938
0.95	]	1.6139
1.00	]	0.9543
1.05	]	1.4064
1.10	]	1.0351
1.15	]	0.4306
1.20	]	0.5441
1.25	]	0.3068
1.30	]	0.4397
1.35	]	0.7949
1.40	]	0.5334
1.45	]	0.5345
1.50	]	0.3791
1.55	]	0.1009
1.60	]	0.0000
1.65	]	0.0000
1.70	]	0.0000
1.75	]	0.0000
1.80	]	0.1997
1.85	]	0.7484
1.90	]	0.5381
1.95	]	0.0000
2.00	]	0.0000
W-RPS		S2(W)

REPORT 1200 22 04 68 K BAP2 1030 04 12 74 3008

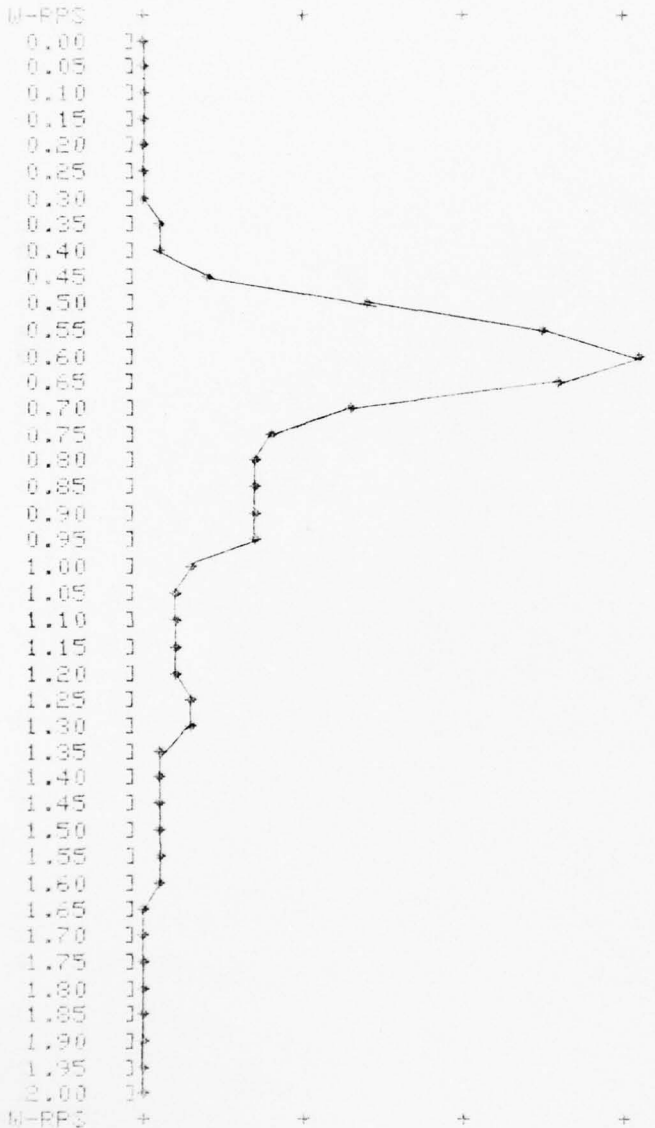
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

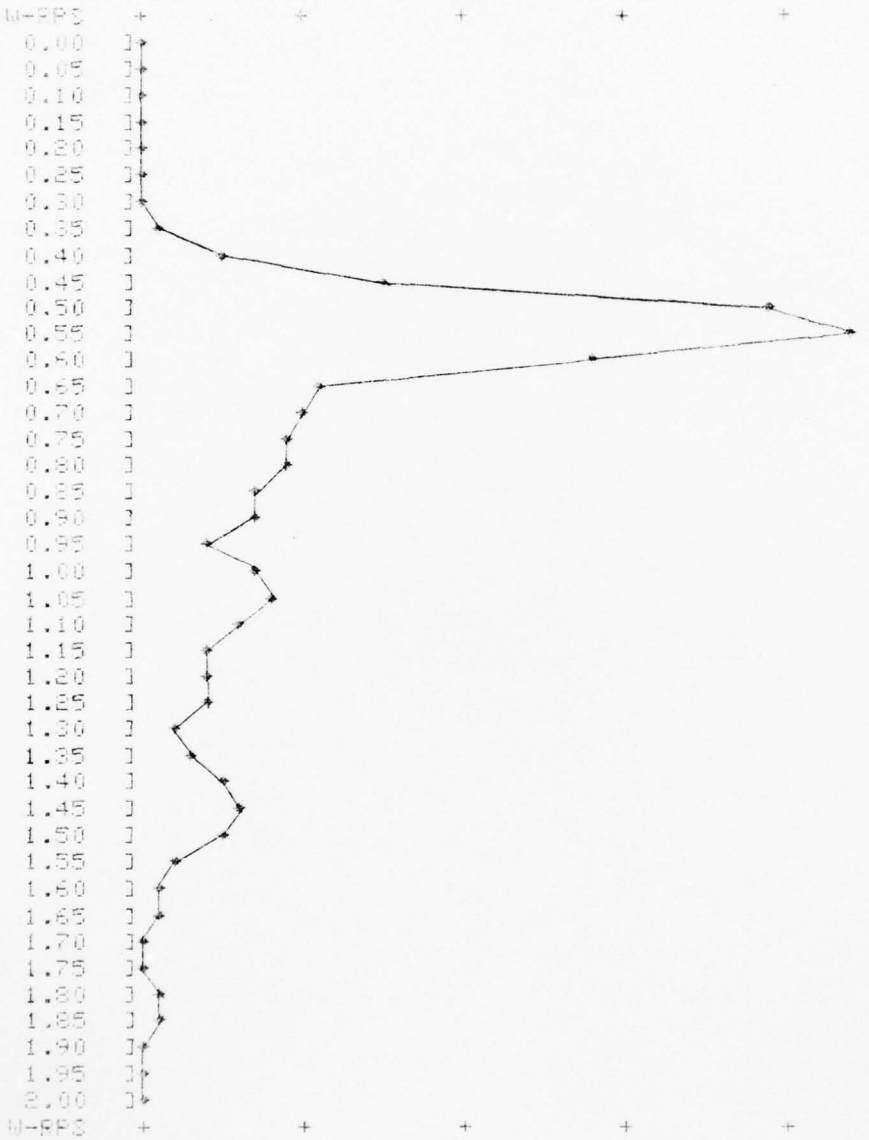
SCALE FOR S2, M**3/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0060
0.25	0.0158
0.30	0.0155
0.35	0.0325
0.40	0.0531
0.45	0.1732
0.50	0.5582
0.55	0.9899
0.60	1.2265
0.65	1.0578
0.70	0.5264
0.75	0.3279
0.80	0.2673
0.85	0.2881
0.90	0.2972
0.95	0.2748
1.00	0.1029
1.05	0.0840
1.10	0.0775
1.15	0.0865
1.20	0.0907
1.25	0.1353
1.30	0.1038
1.35	0.0403
1.40	0.0302
1.45	0.0457
1.50	0.0525
1.55	0.0334
1.60	0.0246
1.65	0.0150
1.70	0.0071
1.75	0.0031
1.80	0.0030
1.85	0.0071
1.90	0.0058
1.95	0.0000
2.00	0.0000

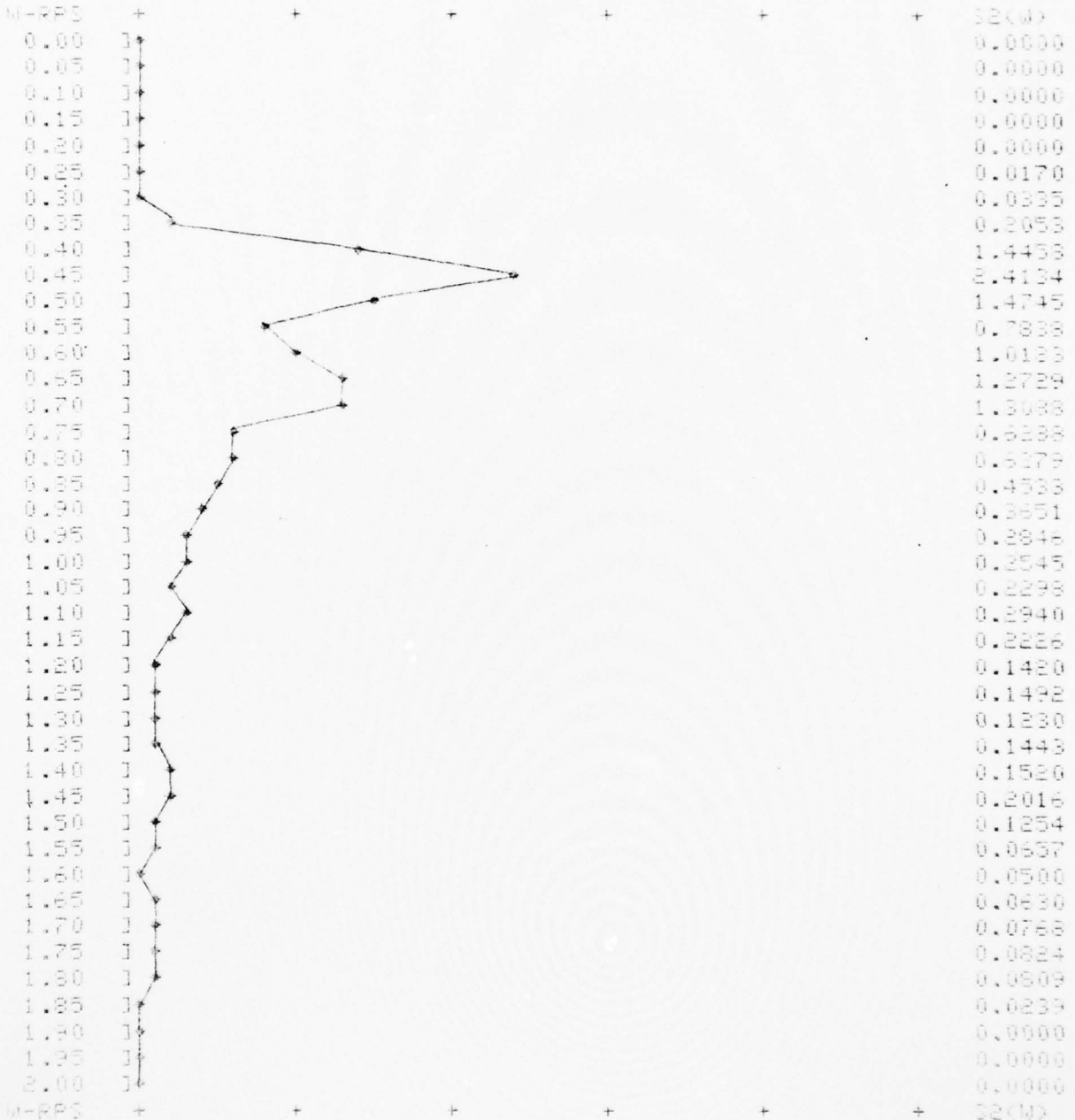
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



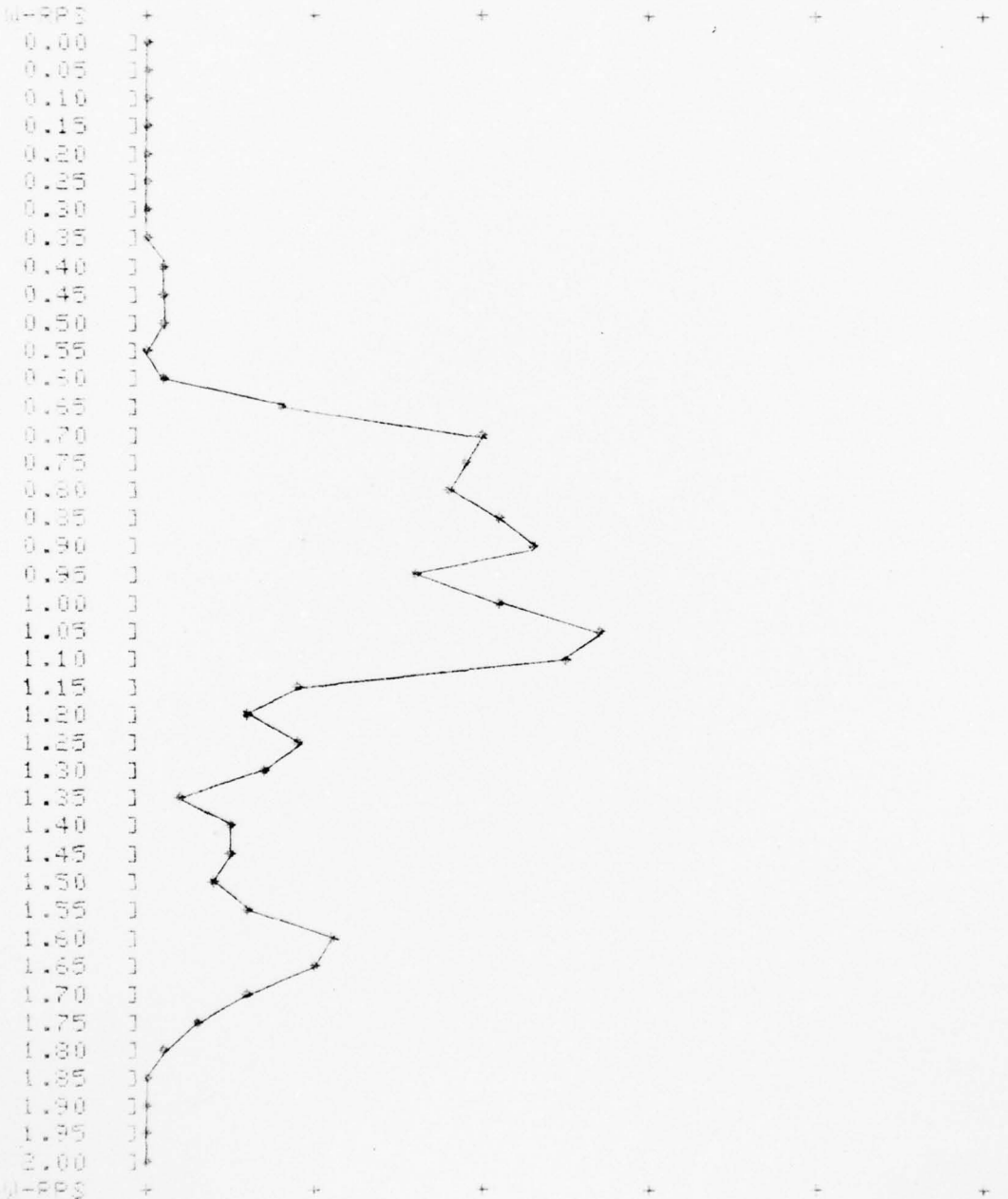
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



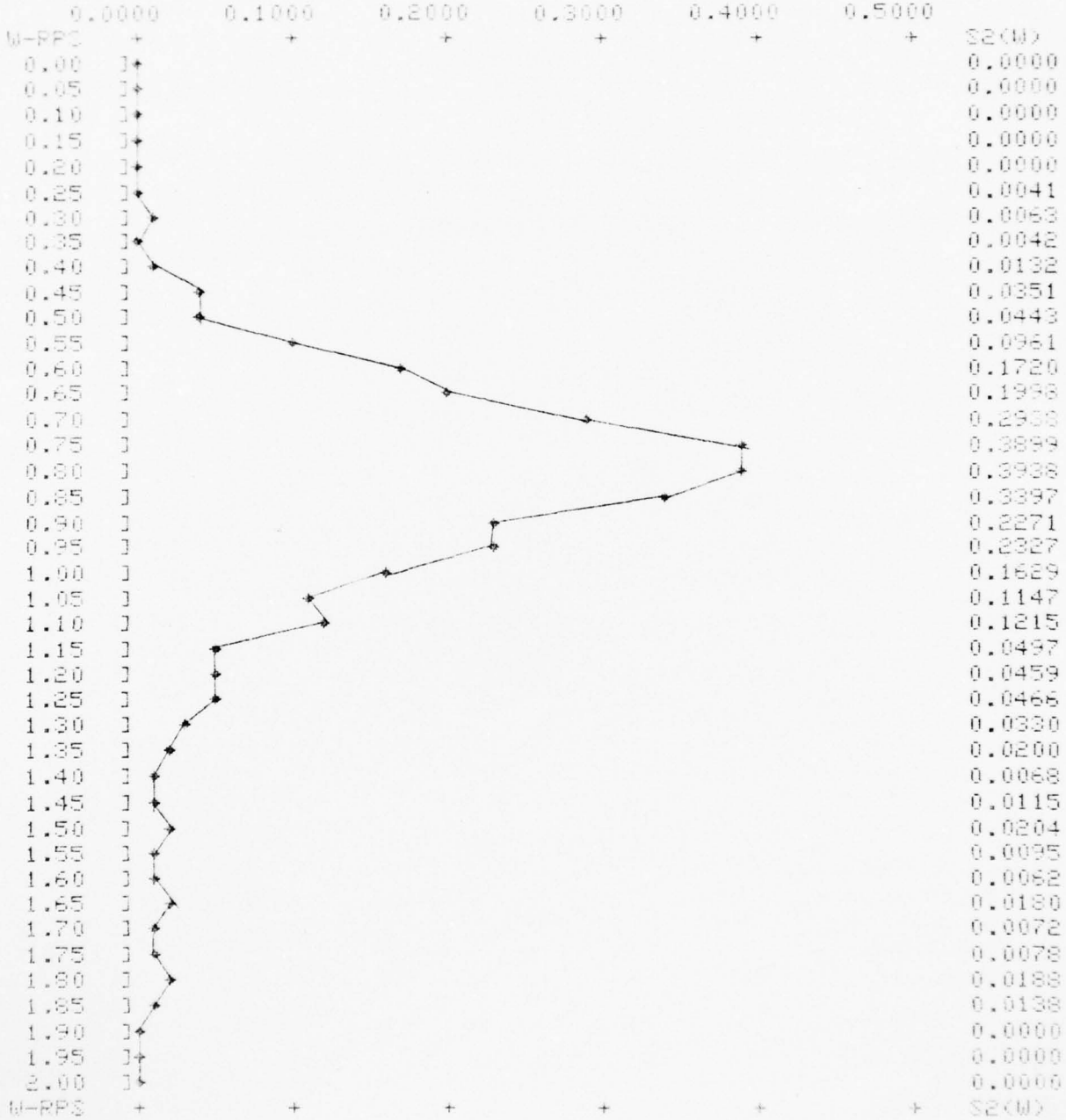
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



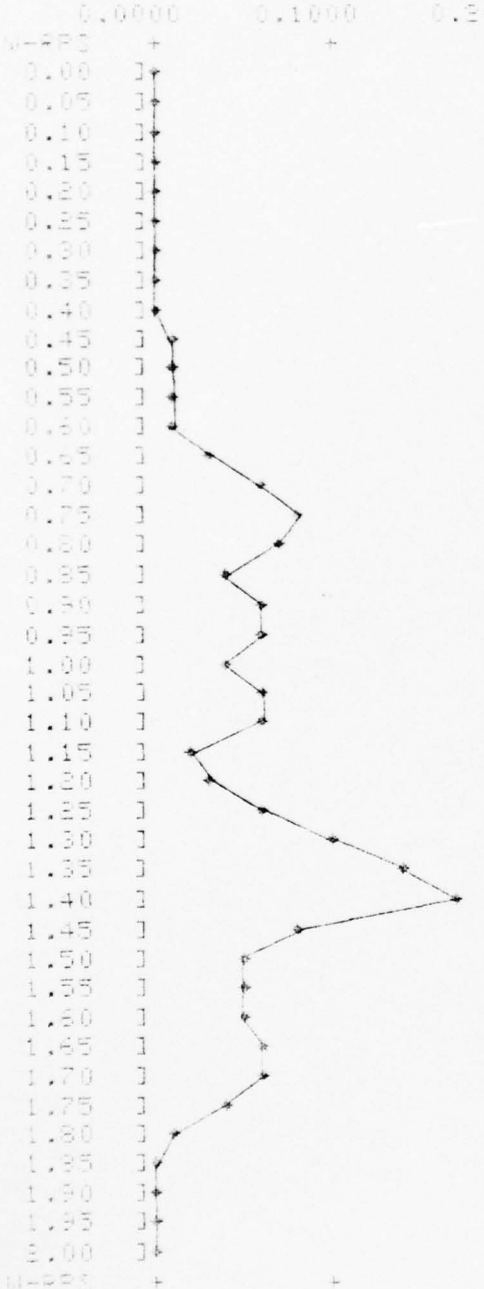
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



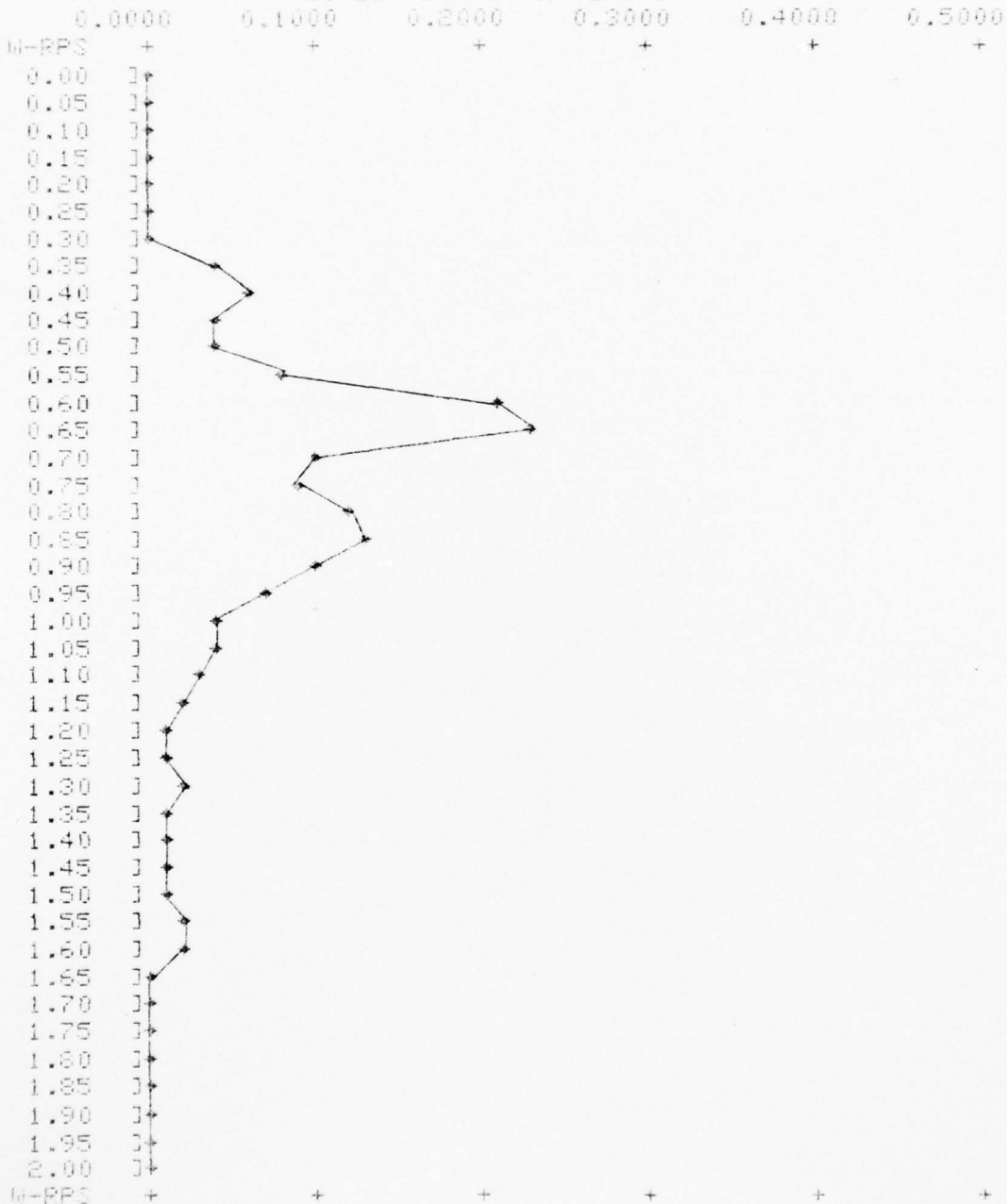
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



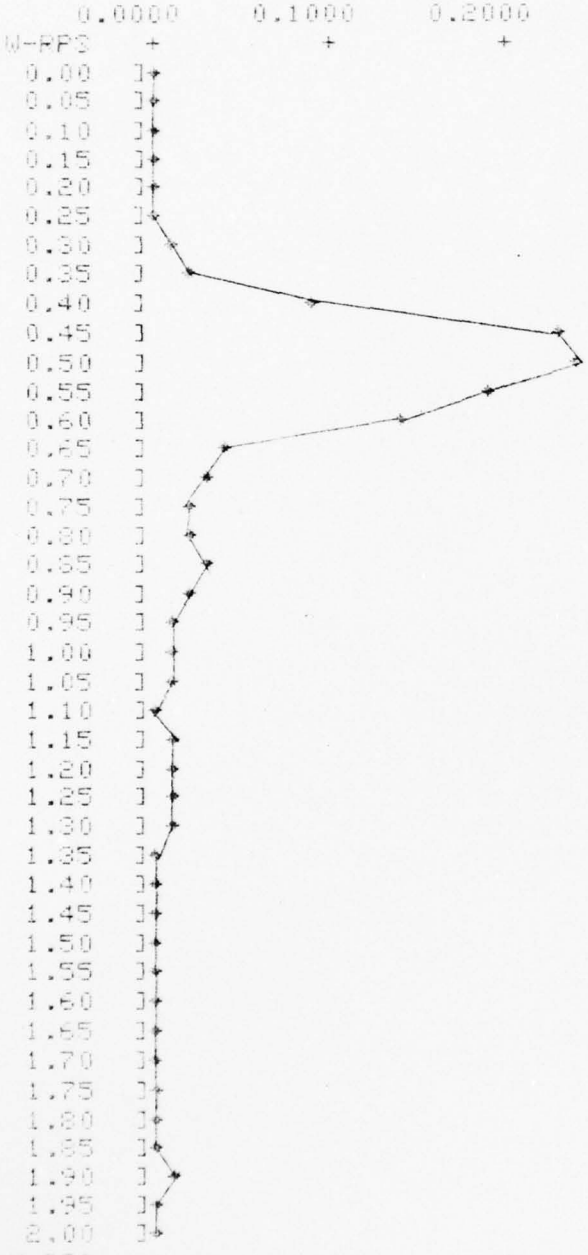
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0010
0.25	0.0016
0.30	0.0068
0.35	0.0197
0.40	0.0870
0.45	0.2291
0.50	0.2449
0.55	0.1922
0.60	0.1405
0.65	0.0390
0.70	0.0314
0.75	0.0200
0.80	0.0248
0.85	0.0274
0.90	0.0214
0.95	0.0117
1.00	0.0131
1.05	0.0070
1.10	0.0039
1.15	0.0072
1.20	0.0079
1.25	0.0057
1.30	0.0059
1.35	0.0049
1.40	0.0026
1.45	0.0044
1.50	0.0013
1.55	0.0018
1.60	0.0030
1.65	0.0000
1.70	0.0000
1.75	0.0000
1.80	0.0005
1.85	0.0046
1.90	0.0053
1.95	0.0000
2.00	0.0000

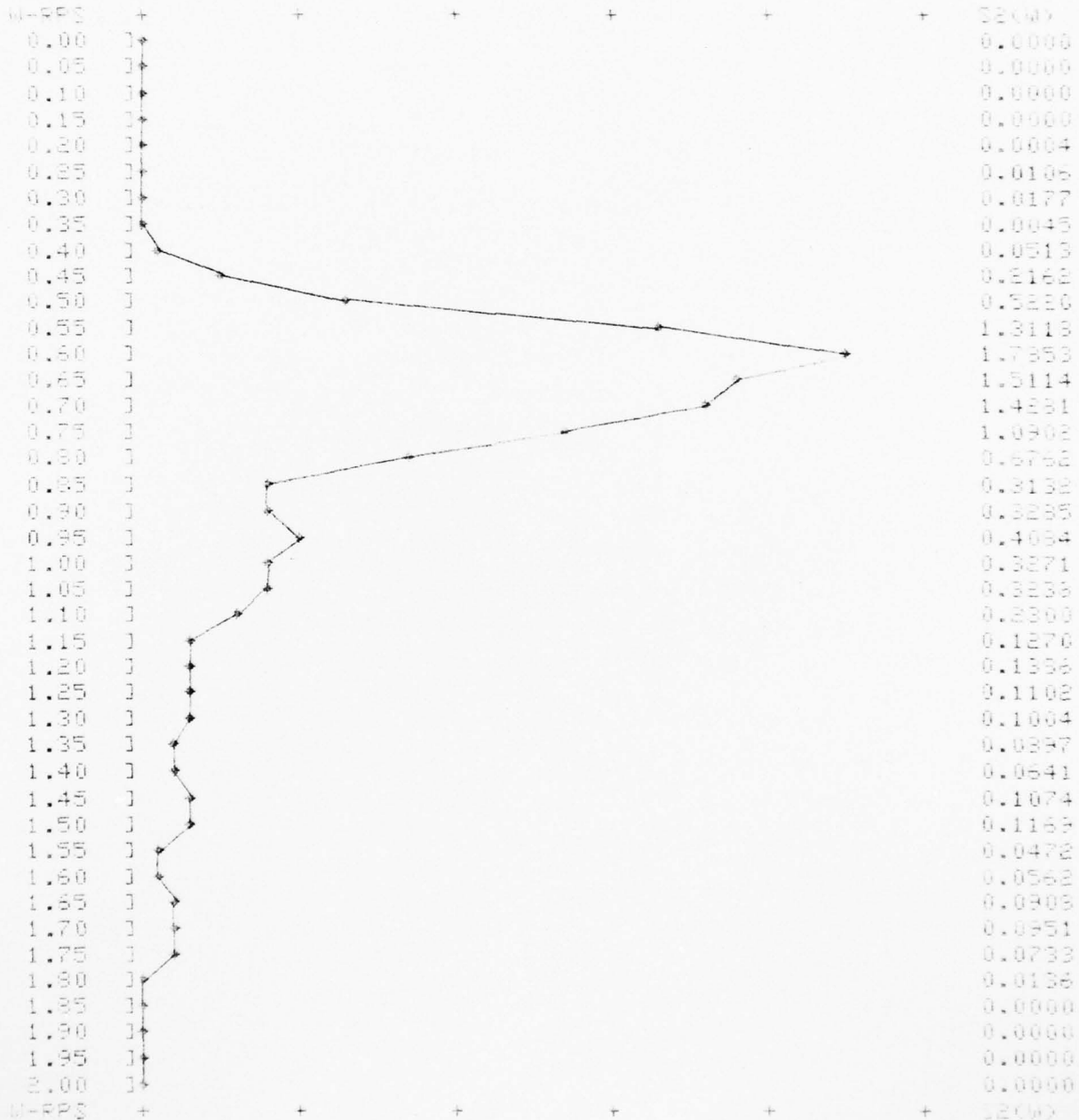
W-RPS S2(W)

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

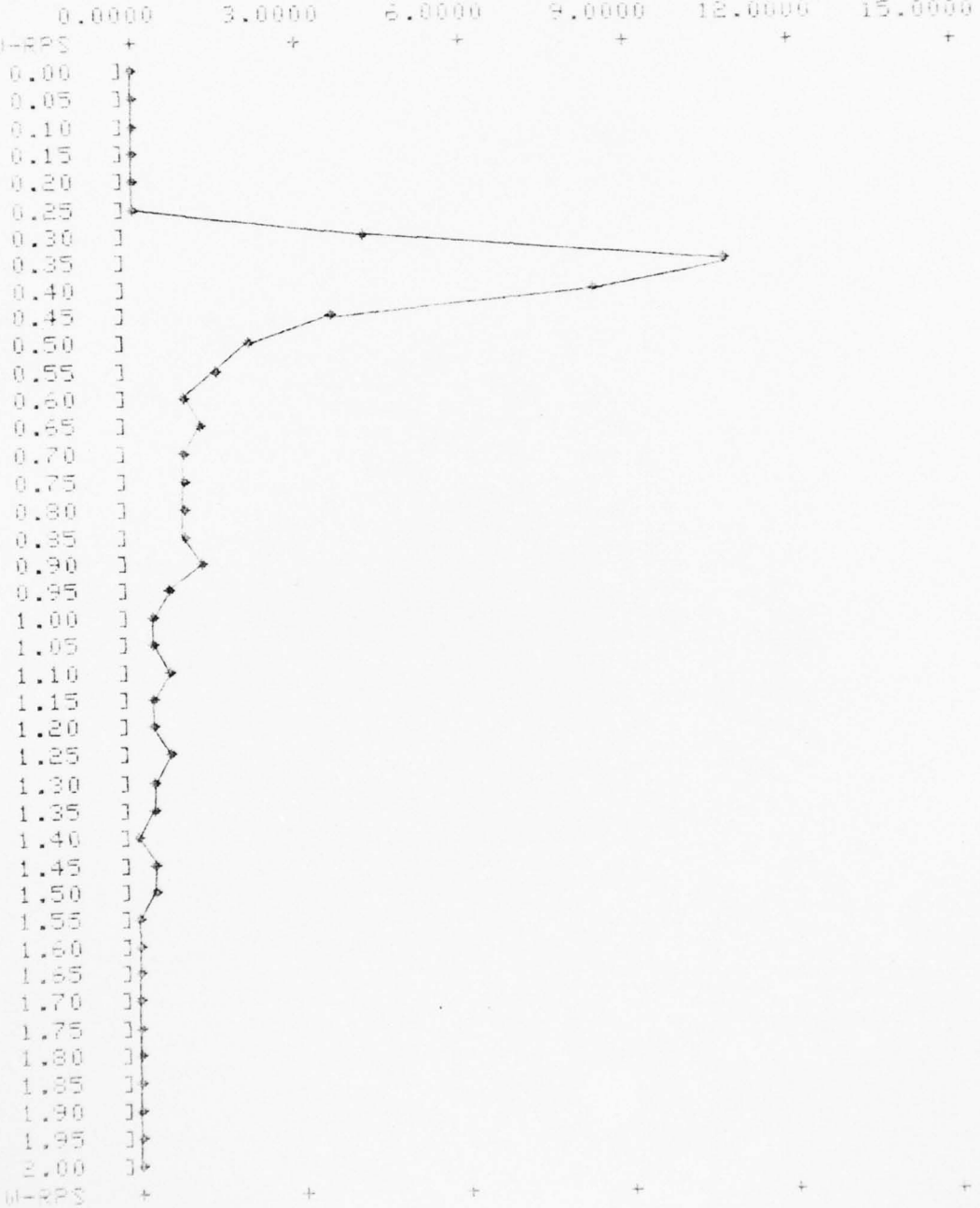
PLOT OF S3 VS. W

SCALE FOR S2: M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



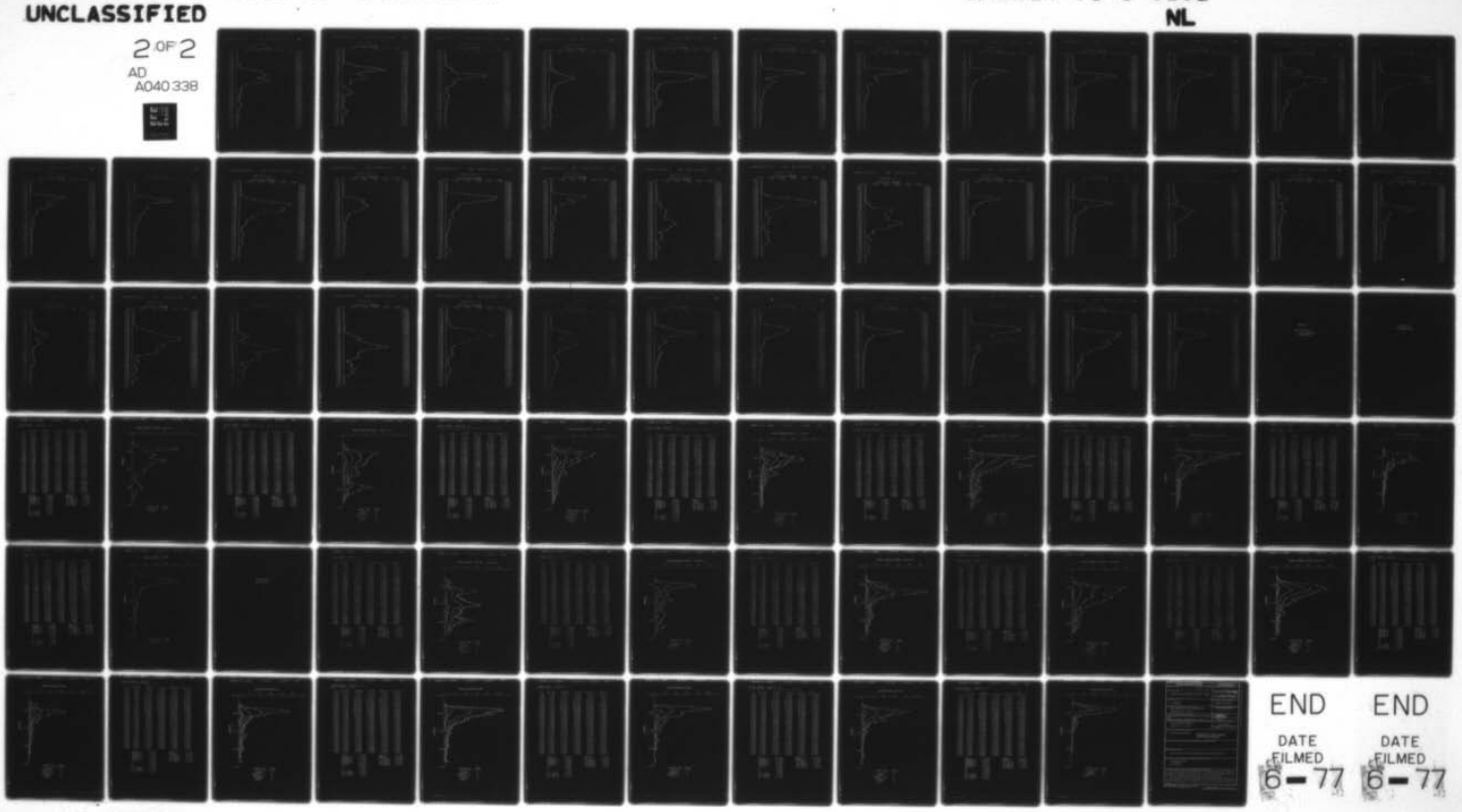
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

W-RPS	0.0000	3.0000	6.0000	9.0000	12.0000	15.0000	S2(W)
0.00							0.0000
0.05							0.0000
0.10							0.0000
0.15							0.0000
0.20							0.0946
0.25							0.3720
0.30							0.8193
0.35							9.2564
0.40							12.2865
0.45							11.3243
0.50							9.2115
0.55							5.3886
0.60							4.3530
0.65							5.0664
0.70							5.0955
0.75							3.6266
0.80							2.5830
0.85							1.6484
0.90							0.6135
0.95							0.5941
1.00							0.3771
1.05							1.2487
1.10							1.0135
1.15							0.7008
1.20							0.6588
1.25							0.8281
1.30							0.4847
1.35							0.4025
1.40							0.8538
1.45							0.7787
1.50							0.4231
1.55							0.3800
1.60							0.5543
1.65							0.4376
1.70							0.1716
1.75							0.0845
1.80							0.1466
1.85							0.0807
1.90							0.0000
1.95							0.0000
2.00							0.0000
W-RPS	0.0000	3.0000	6.0000	9.0000	12.0000	15.0000	S2(W)

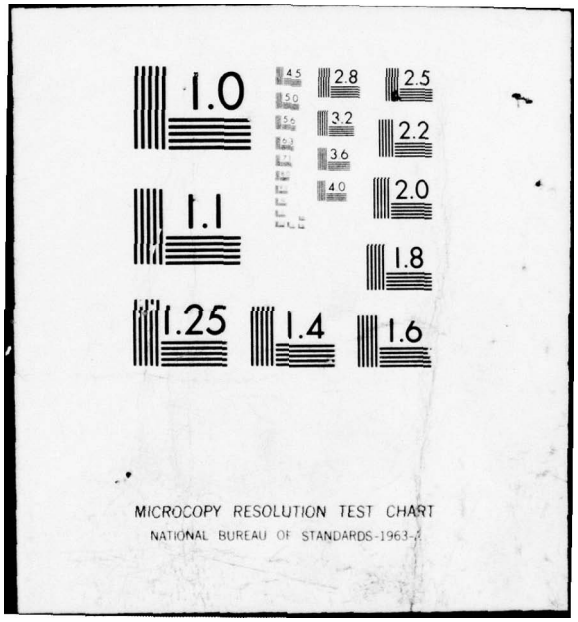
AD-A040 338 WEBB INST OF NAVAL ARCHITECTURE GLEN COVE N Y F/G 8/3
ANALYSIS OF WAVE SPECTRA AT STATION 'KILO'. SUPPLEMENT.(U)
JAN 76 D HOFFMAN N00014-73-C-0101
UNCLASSIFIED NL

2 OF 2
AD
A040 338



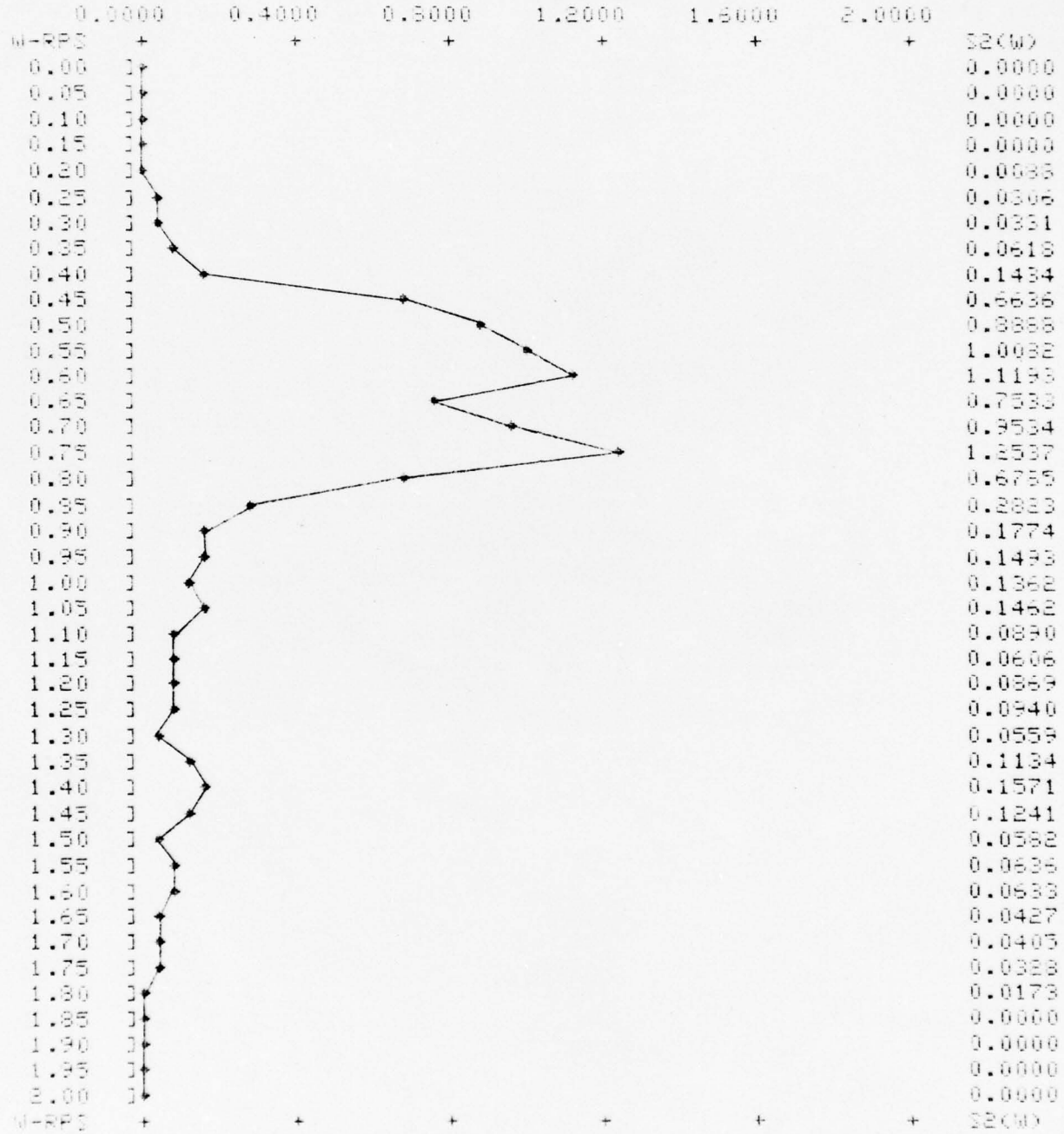
END DATE FILMED 6-77

END DATE FILMED 6-77


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

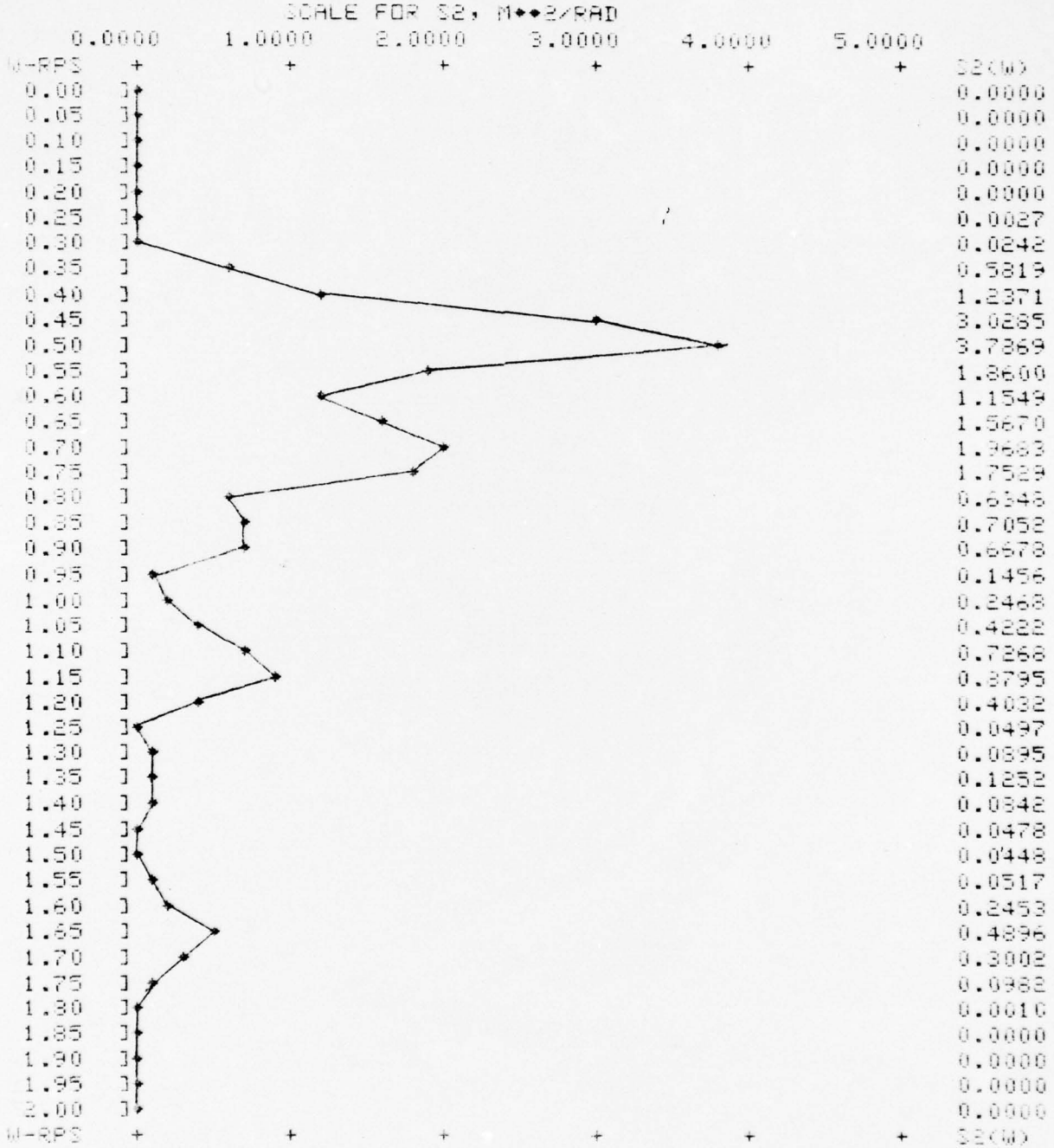
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



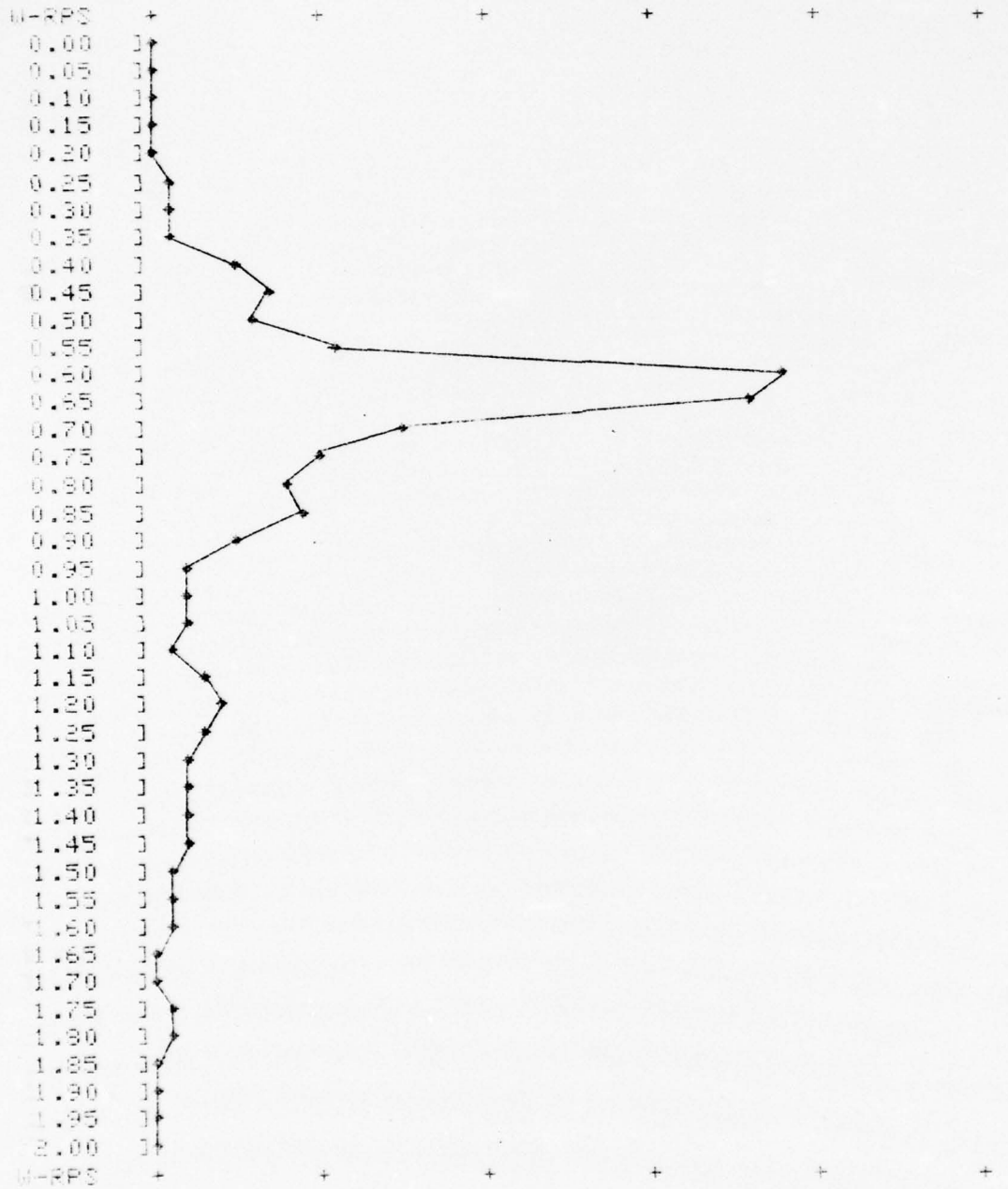
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



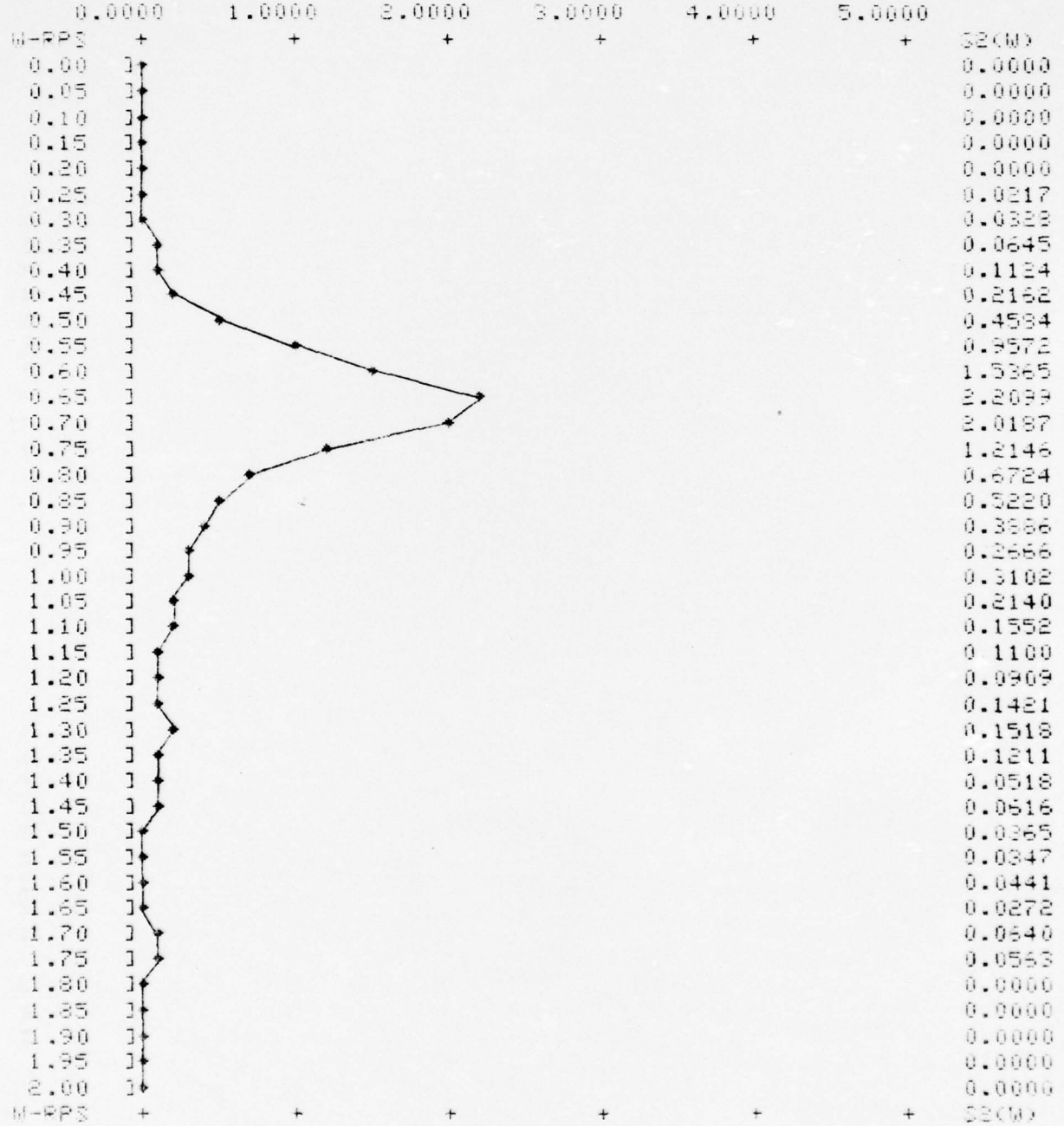
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



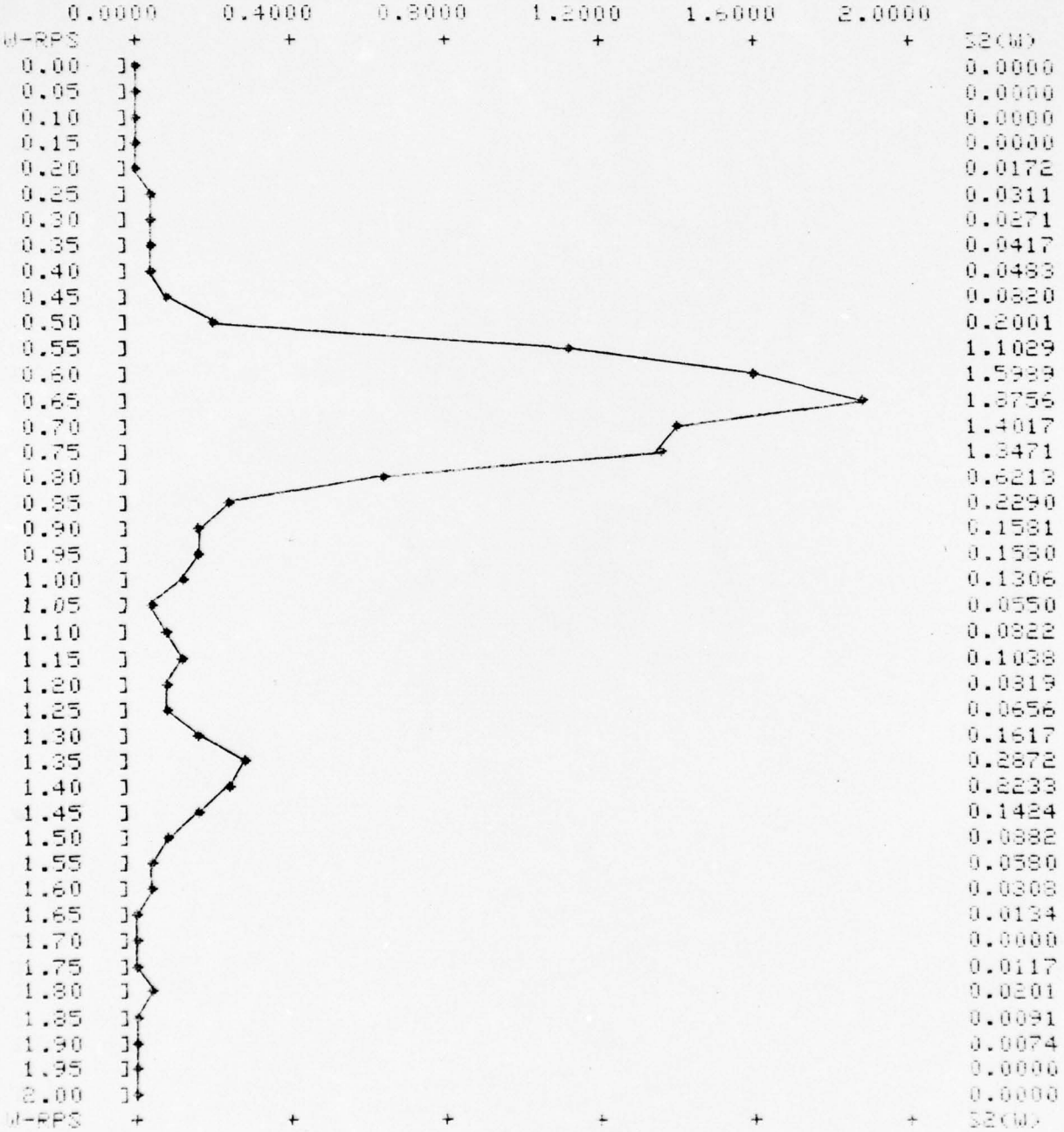
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



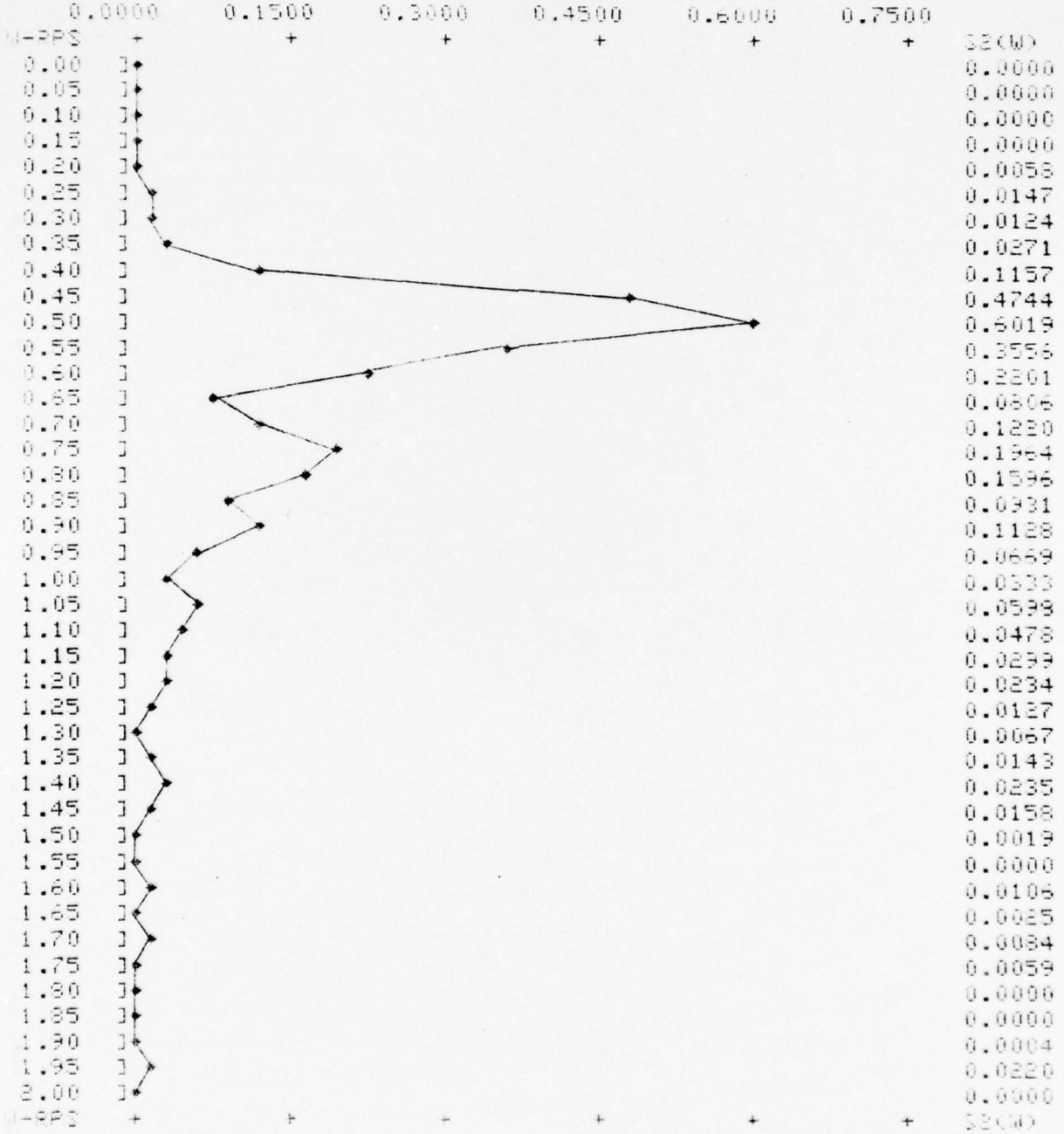
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

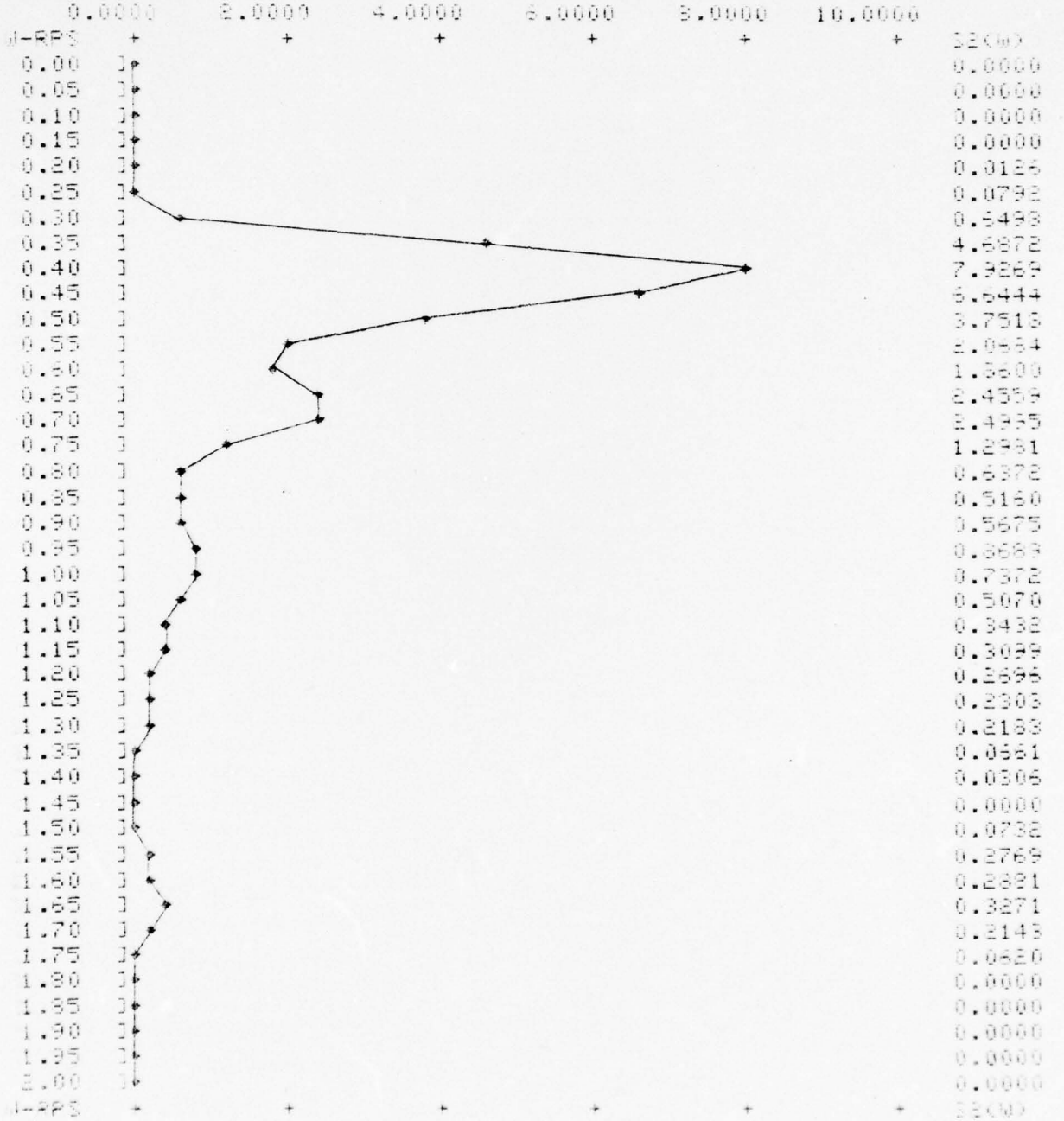
SCALE FOR S2, M**2/RAD



REPORT 1200 11 12 63 K VINCE 1830 03 12 74 3025

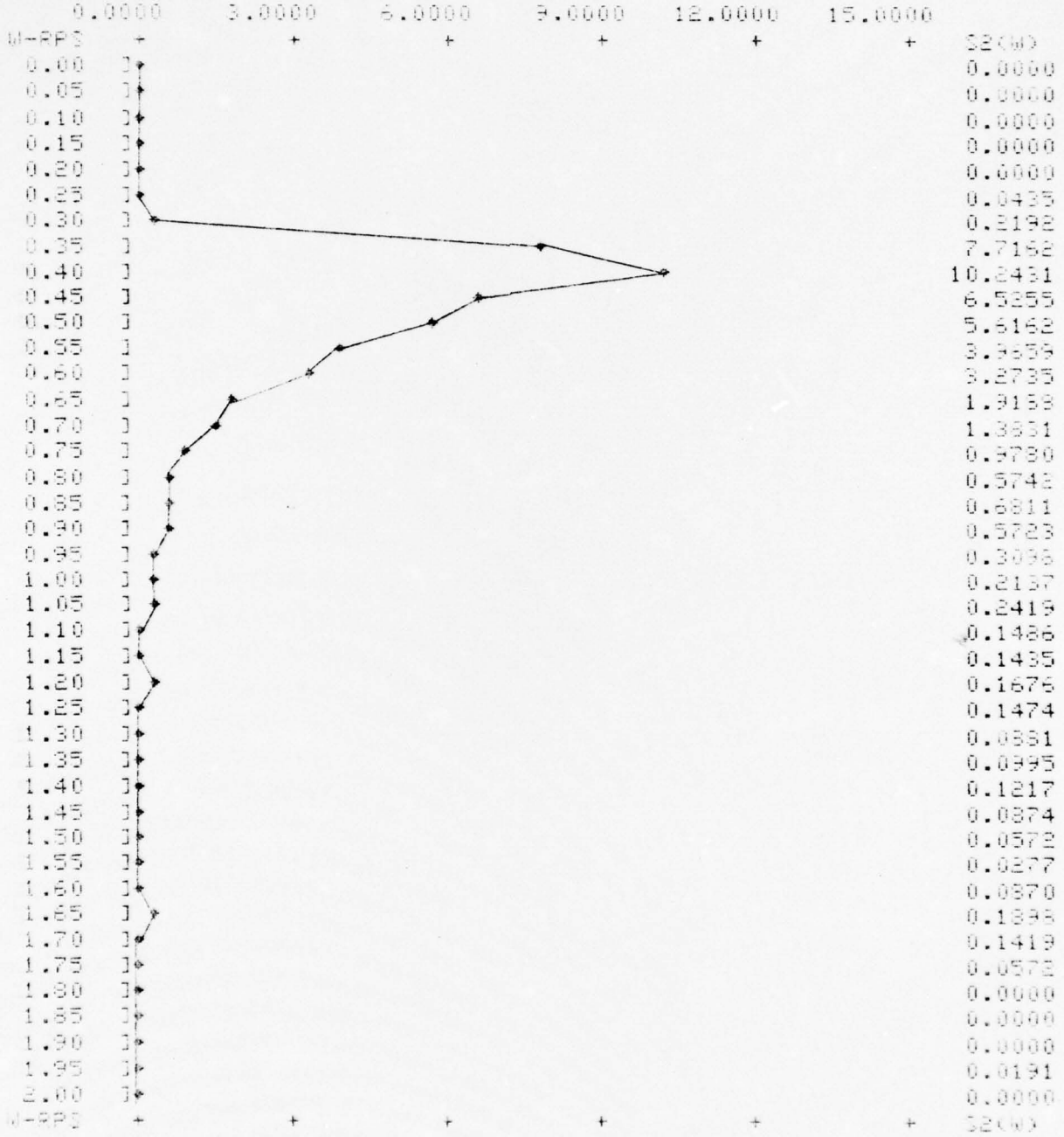
PLOT OF SE VS. W

SCALE FOR SE: M**2/RAD



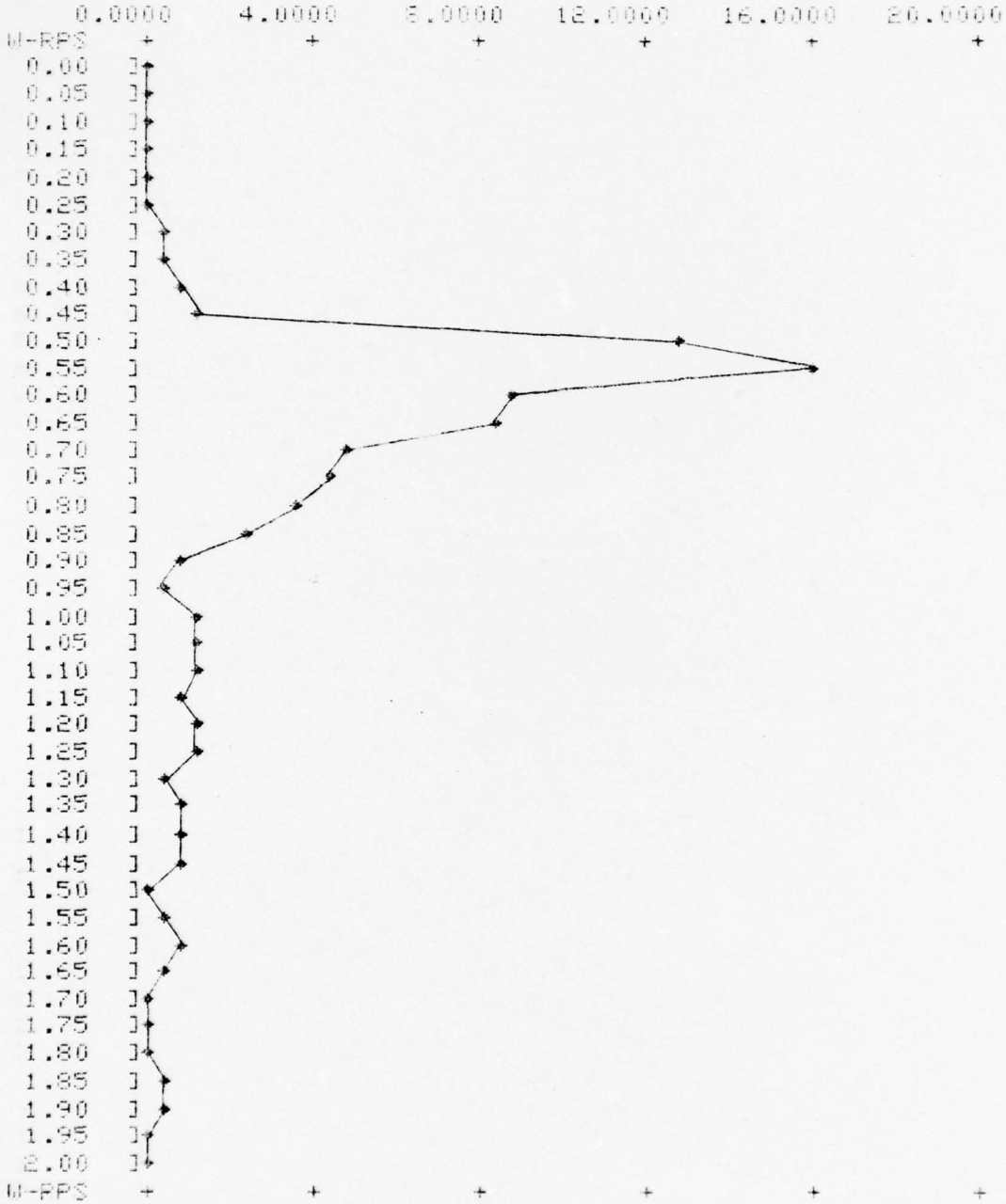
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



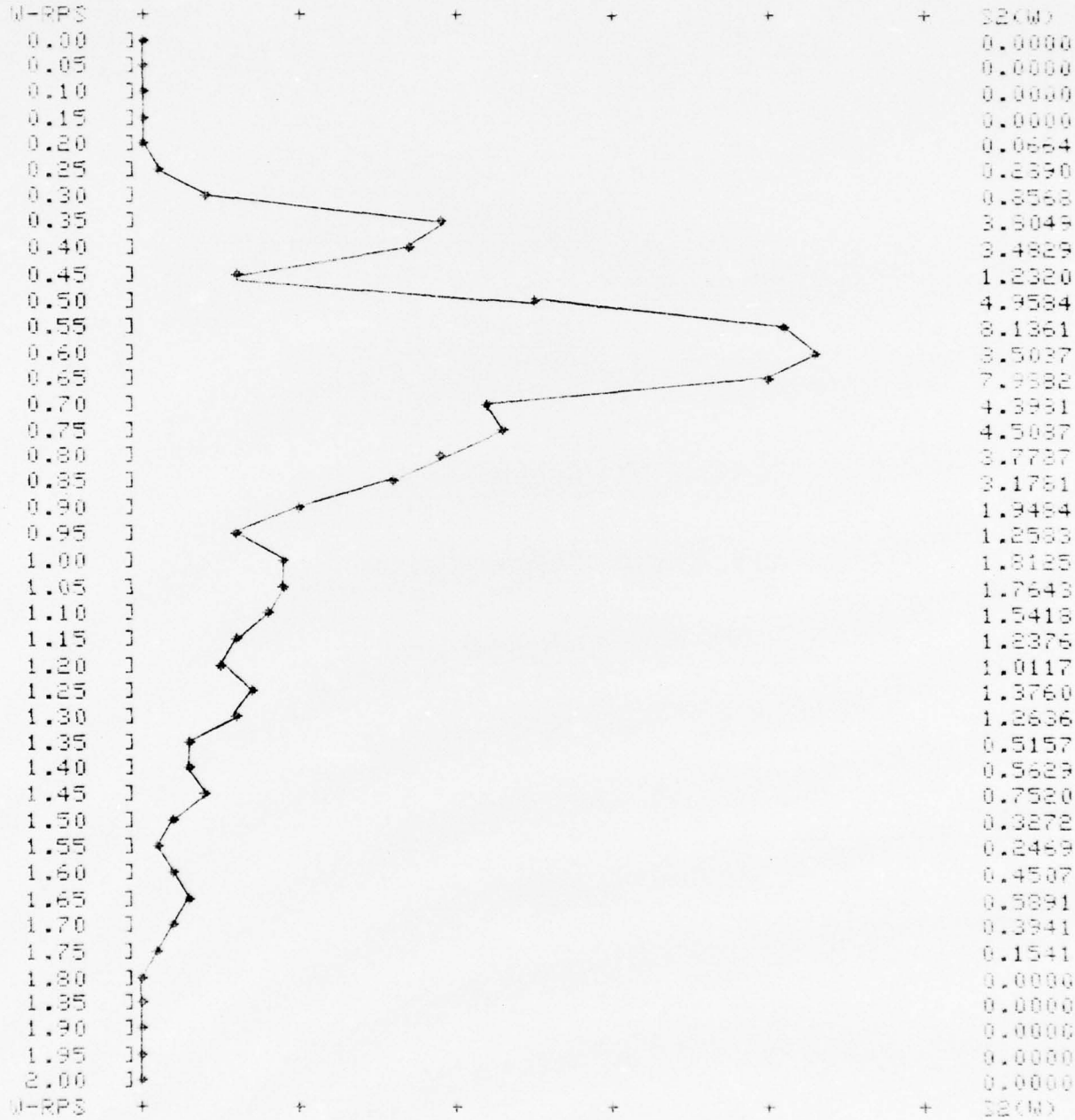
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

W-RPS	0.0000	3.0000	6.0000	9.0000	12.0000	15.0000	S2(W)
0.00							0.0000
0.05							0.0000
0.10							0.0000
0.15							0.0000
0.20							0.1107
0.25							0.2156
0.30							0.1578
0.35							0.5672
0.40							1.3178
0.45							6.0018
0.50							10.3268
0.55							8.3345
0.60							4.7703
0.65							3.9000
0.70							3.5481
0.75							3.5557
0.80							2.7614
0.85							1.4688
0.90							1.1524
0.95							0.9090
1.00							0.8738
1.05							0.8251
1.10							0.8309
1.15							0.8237
1.20							0.4956
1.25							0.4745
1.30							0.4172
1.35							0.3537
1.40							0.3471
1.45							0.3373
1.50							0.3502
1.55							0.3988
1.60							0.0595
1.65							0.0000
1.70							0.1898
1.75							0.3707
1.80							0.2147
1.85							0.0000
1.90							0.0000
1.95							0.0000
2.00							0.0000
W-RPS							S2(W)

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

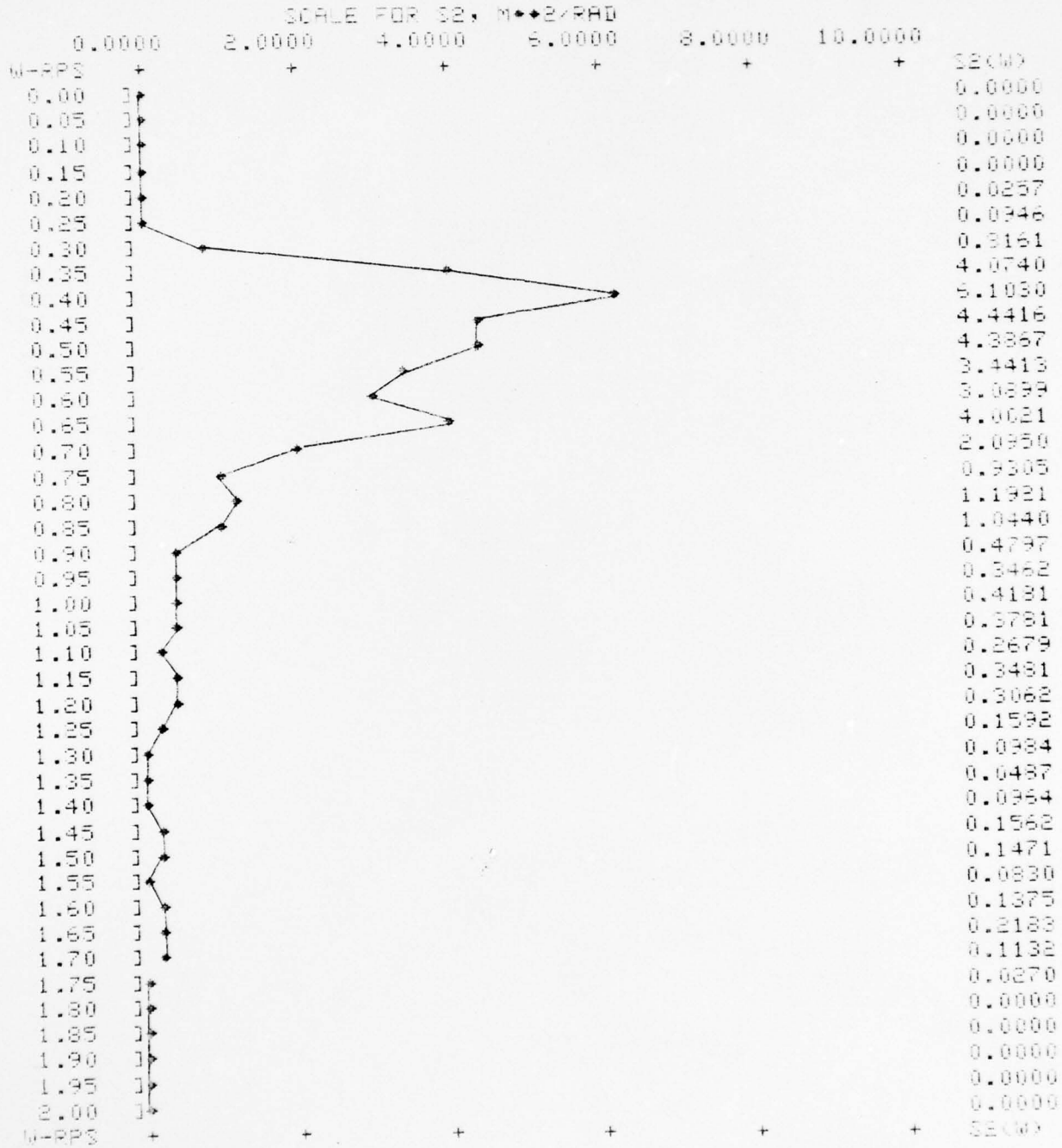
SCALE FOR S2, M**3/RAD

0.0000 1.0000 2.0000 3.0000 4.0000 5.0000

W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0203
0.25	0.0553
0.30	0.0770
0.35	0.1295
0.40	0.5041
0.45	2.3086
0.50	4.6822
0.55	4.1034
0.60	4.2723
0.65	4.9431
0.70	2.6932
0.75	1.7901
0.80	1.6582
0.85	1.2956
0.90	0.8304
0.95	0.5641
1.00	0.5741
1.05	0.5240
1.10	0.3423
1.15	0.3235
1.20	0.1744
1.25	0.2171
1.30	0.2224
1.35	0.1567
1.40	0.1551
1.45	0.2301
1.50	0.2084
1.55	0.1368
1.60	0.2031
1.65	0.1356
1.70	0.1040
1.75	0.0571
1.80	0.0035
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

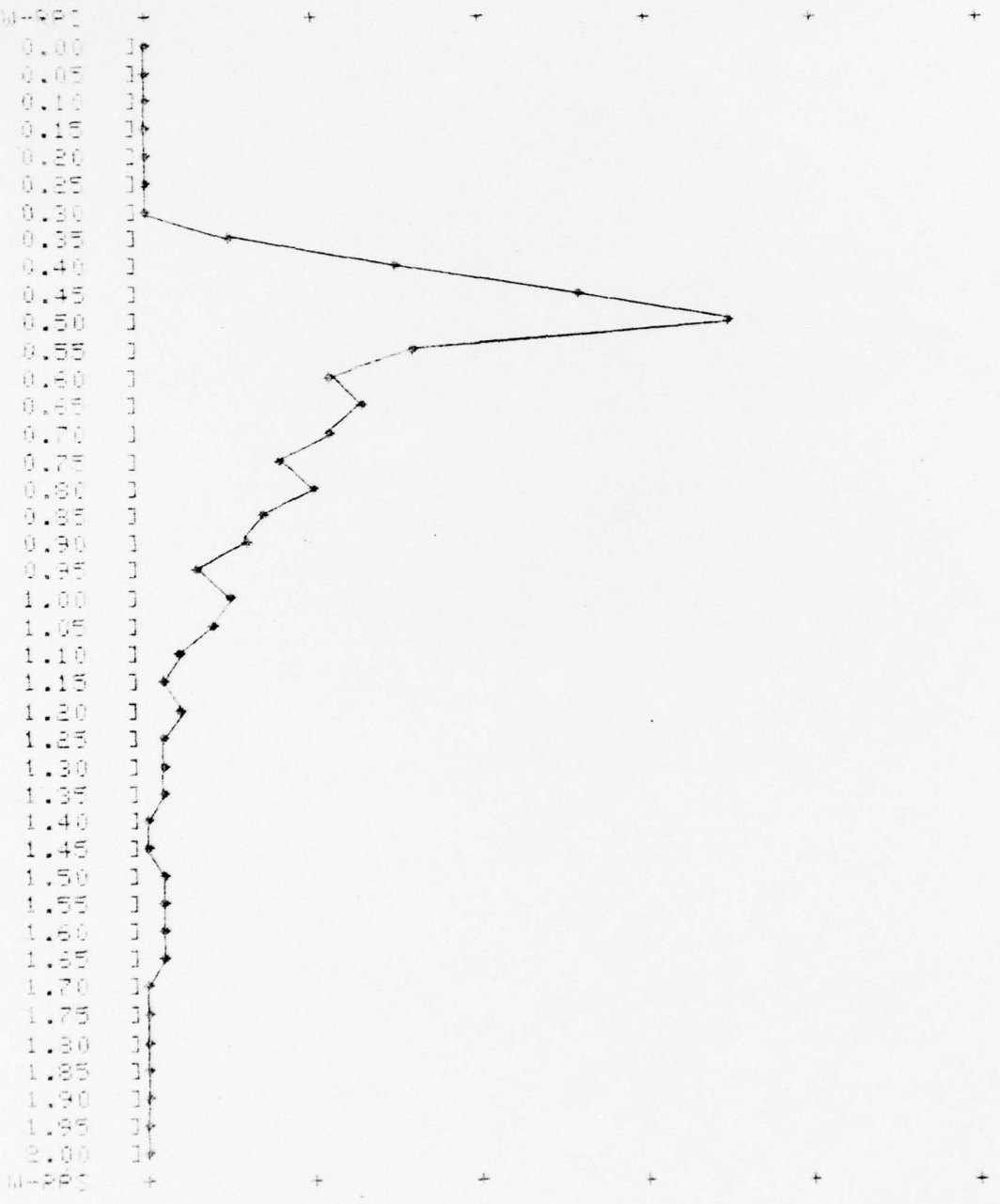
W-RPS S2(W)

PLOT OF S2 VS. W



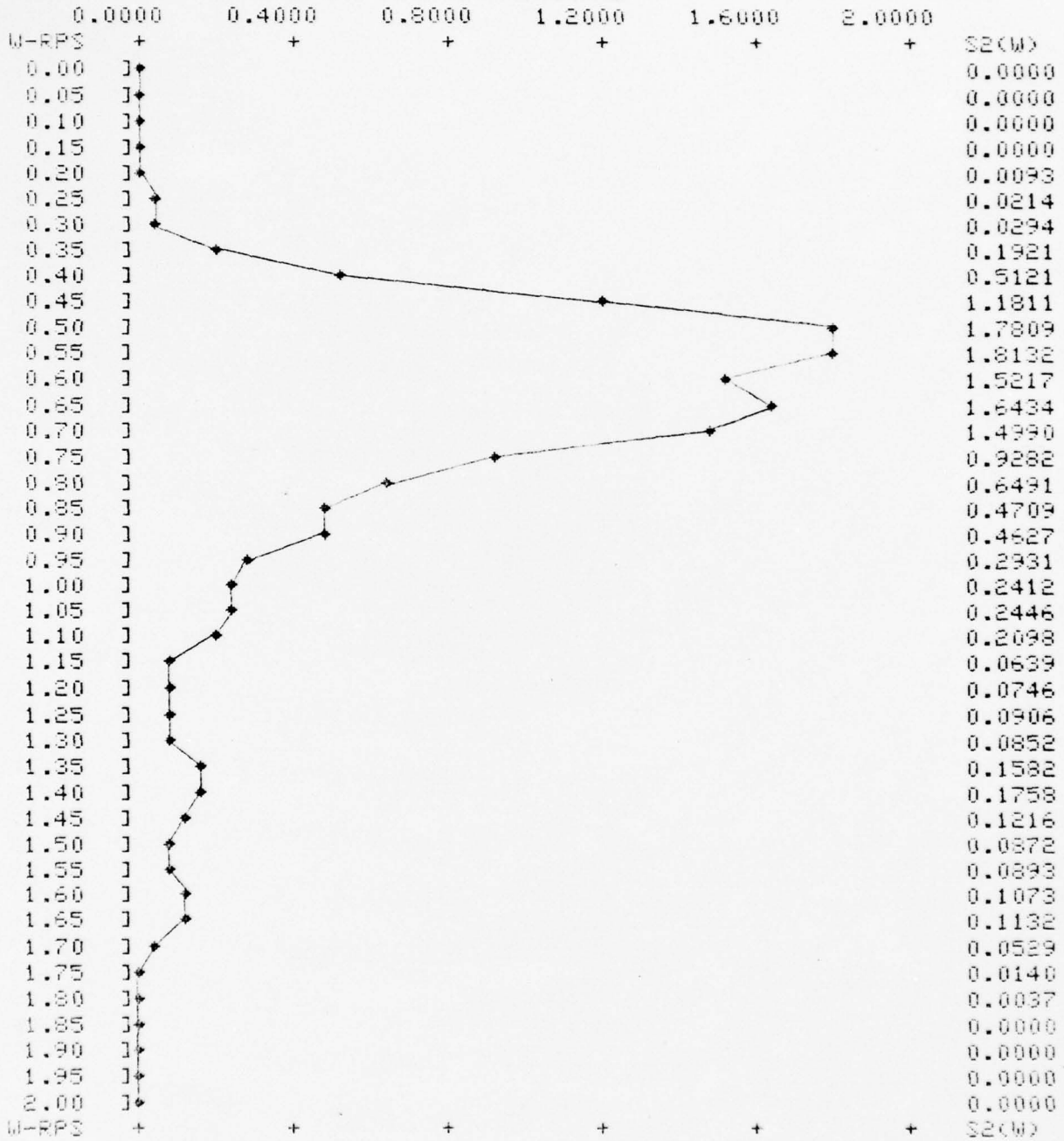
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



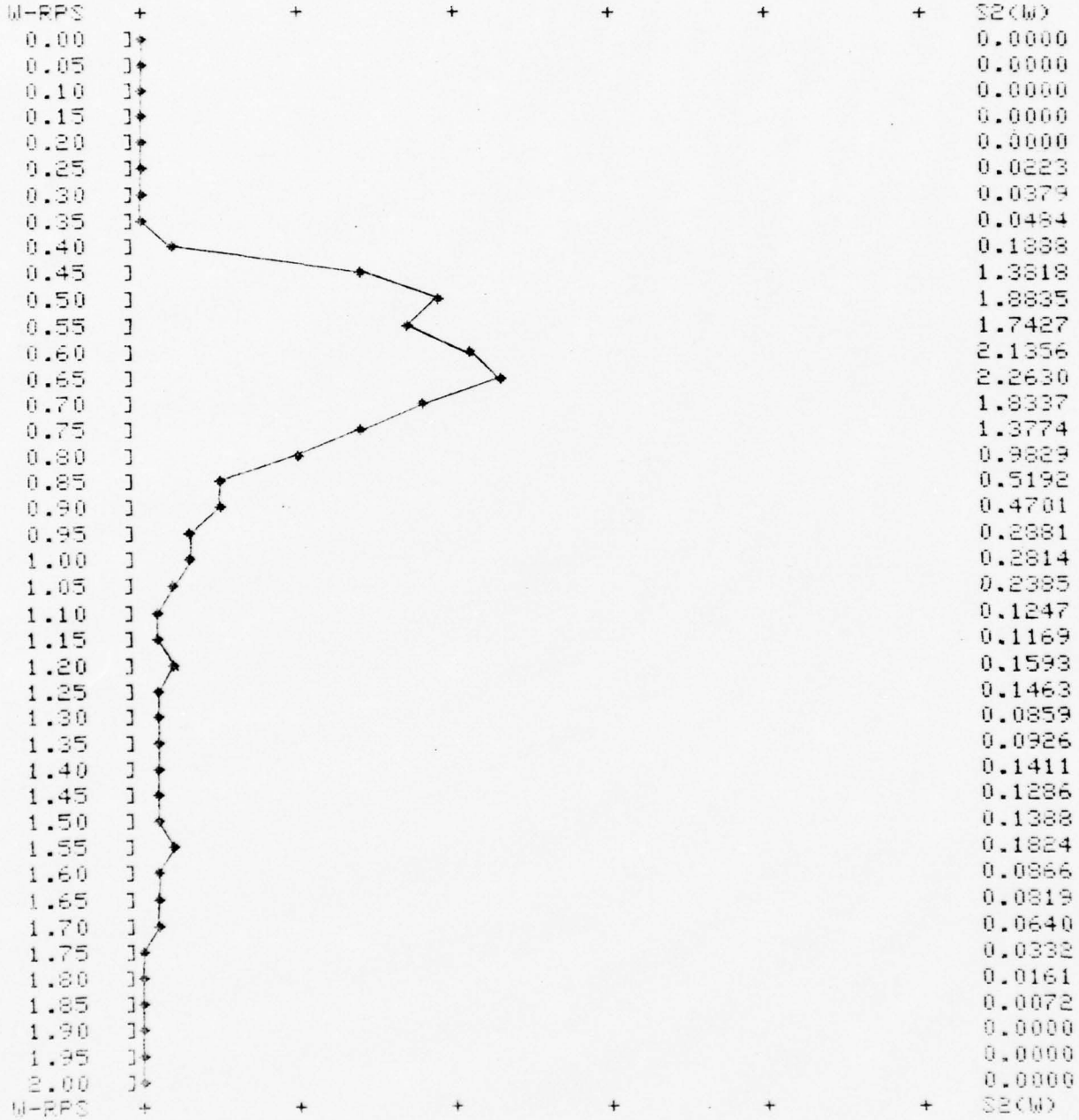
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



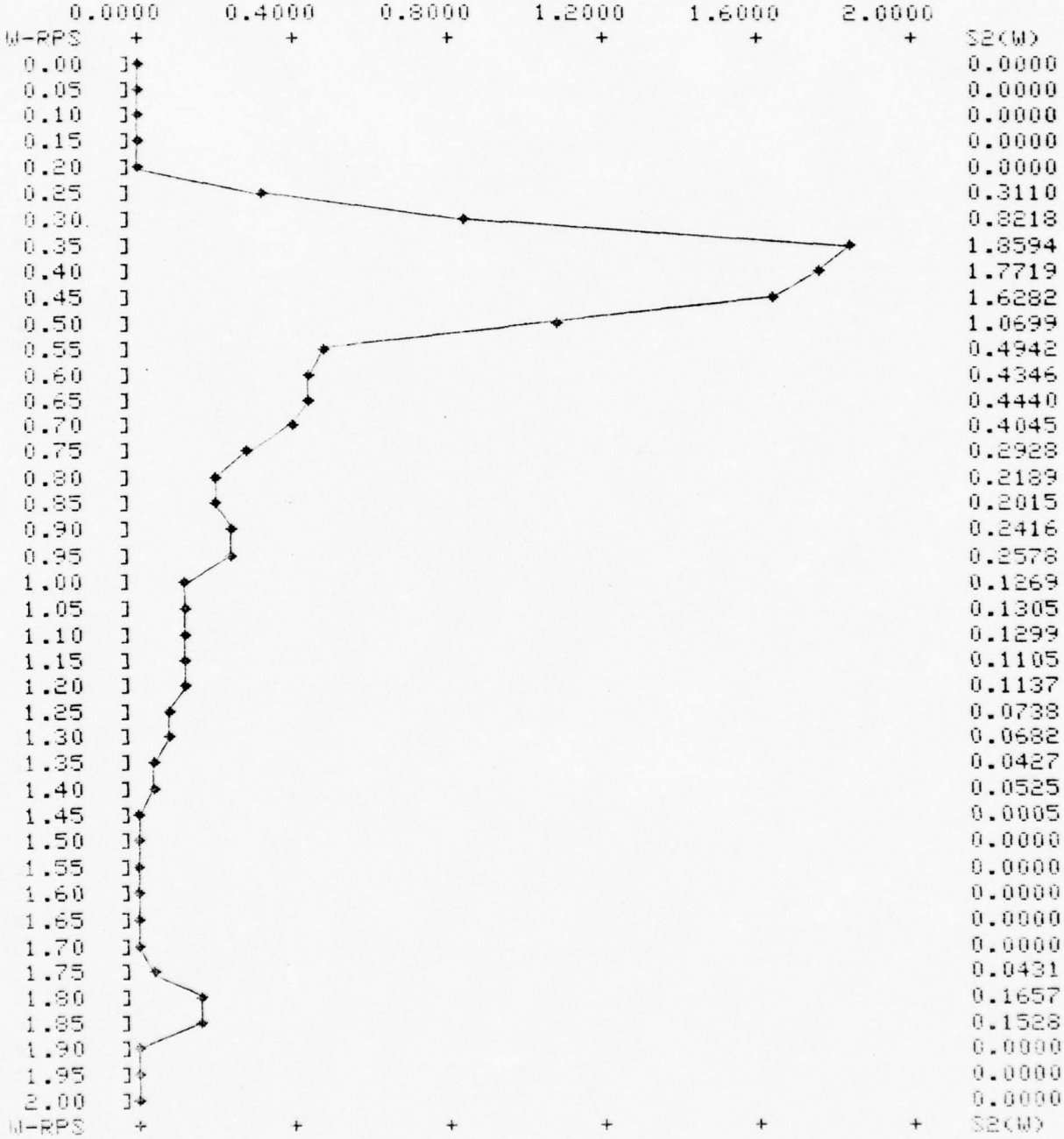
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



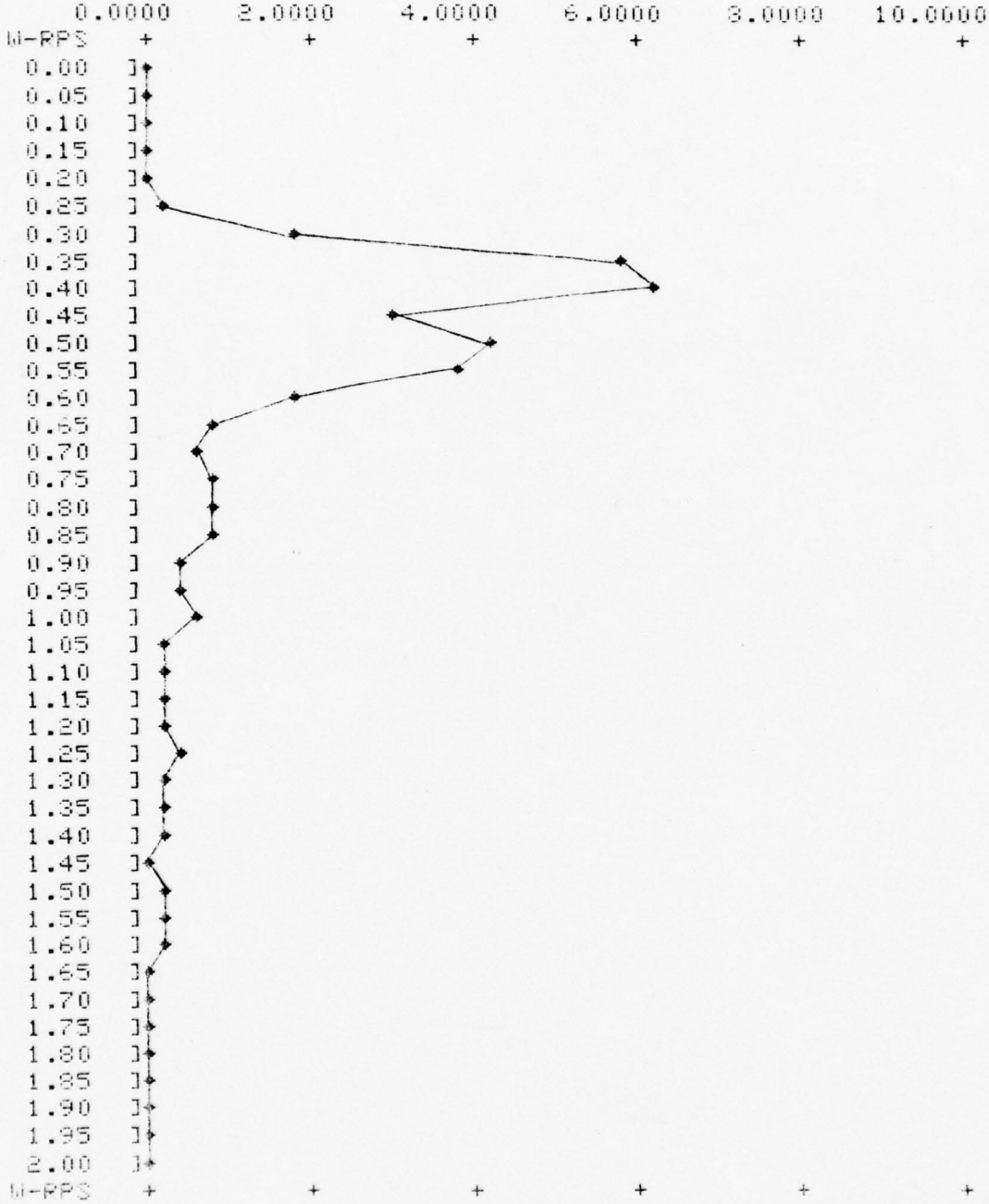
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

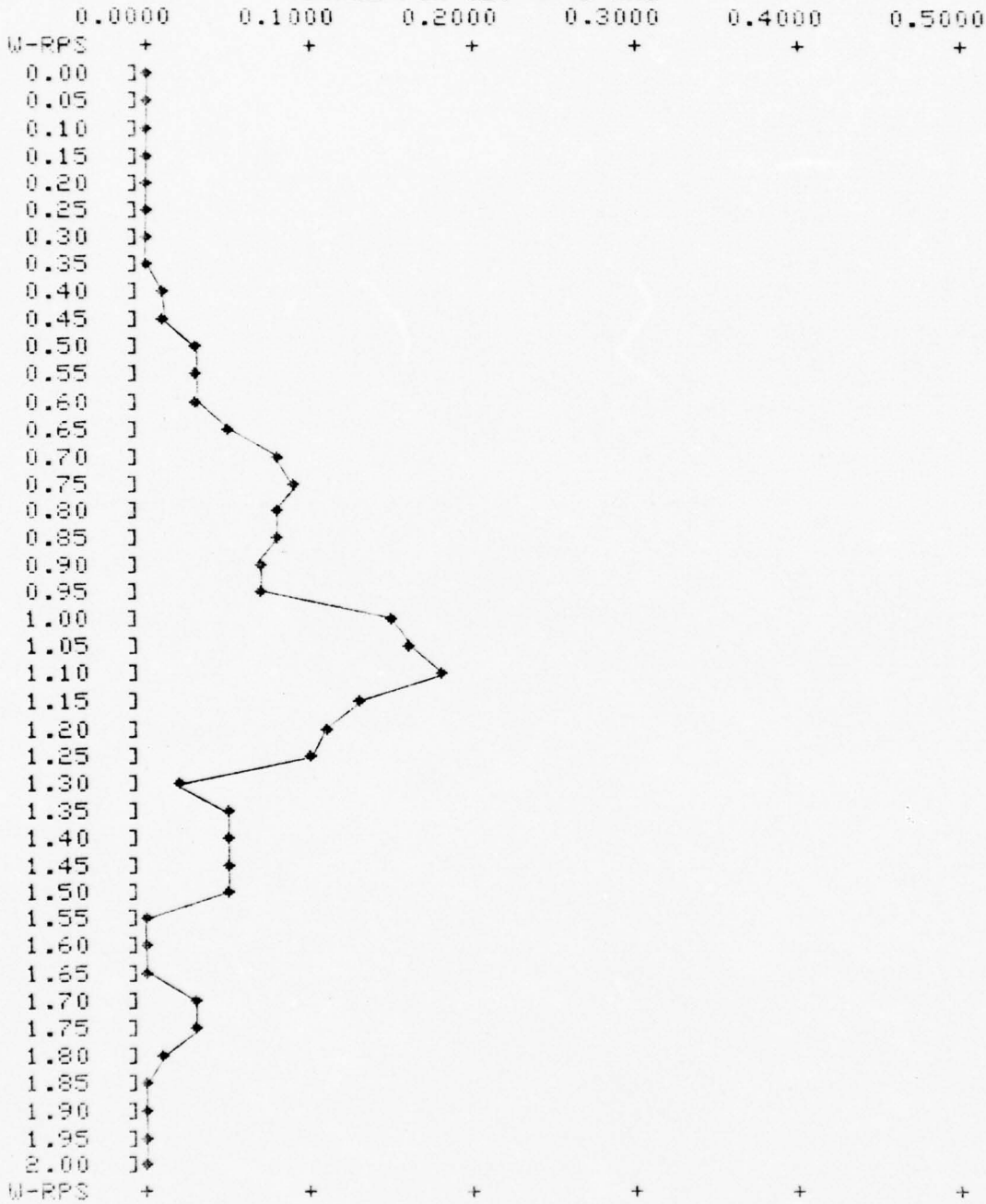
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0503
0.25	0.1675
0.30	1.8483
0.35	5.7266
0.40	6.1440
0.45	3.0639
0.50	4.2455
0.55	3.7154
0.60	1.8915
0.65	0.8538
0.70	0.6551
0.75	0.8188
0.80	0.8736
0.85	0.7139
0.90	0.3852
0.95	0.3945
1.00	0.5024
1.05	0.2749
1.10	0.1507
1.15	0.2587
1.20	0.2493
1.25	0.3128
1.30	0.2701
1.35	0.2285
1.40	0.1280
1.45	0.0899
1.50	0.2515
1.55	0.1495
1.60	0.1255
1.65	0.0967
1.70	0.0883
1.75	0.0451
1.80	0.0083
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

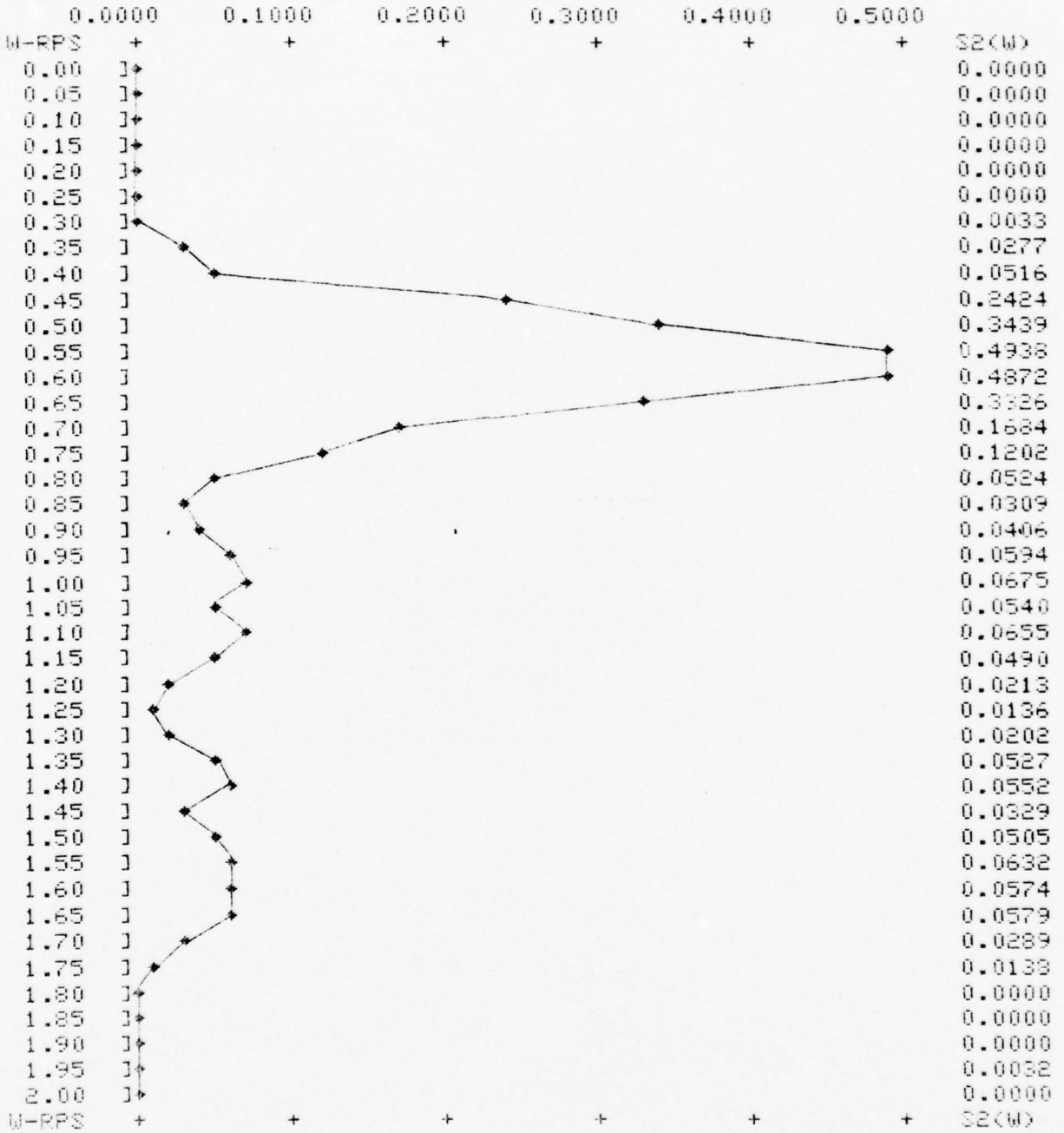
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



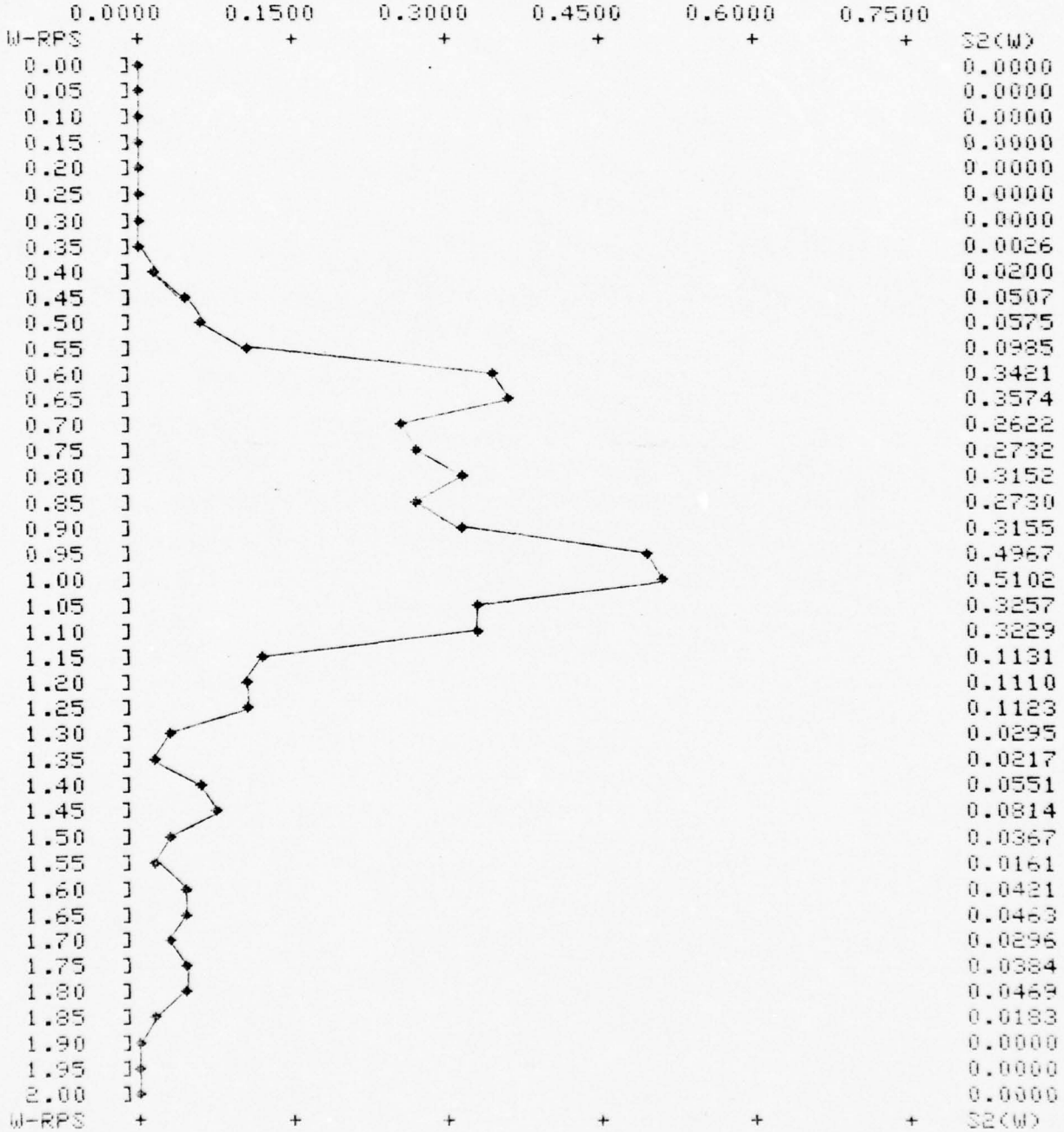
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



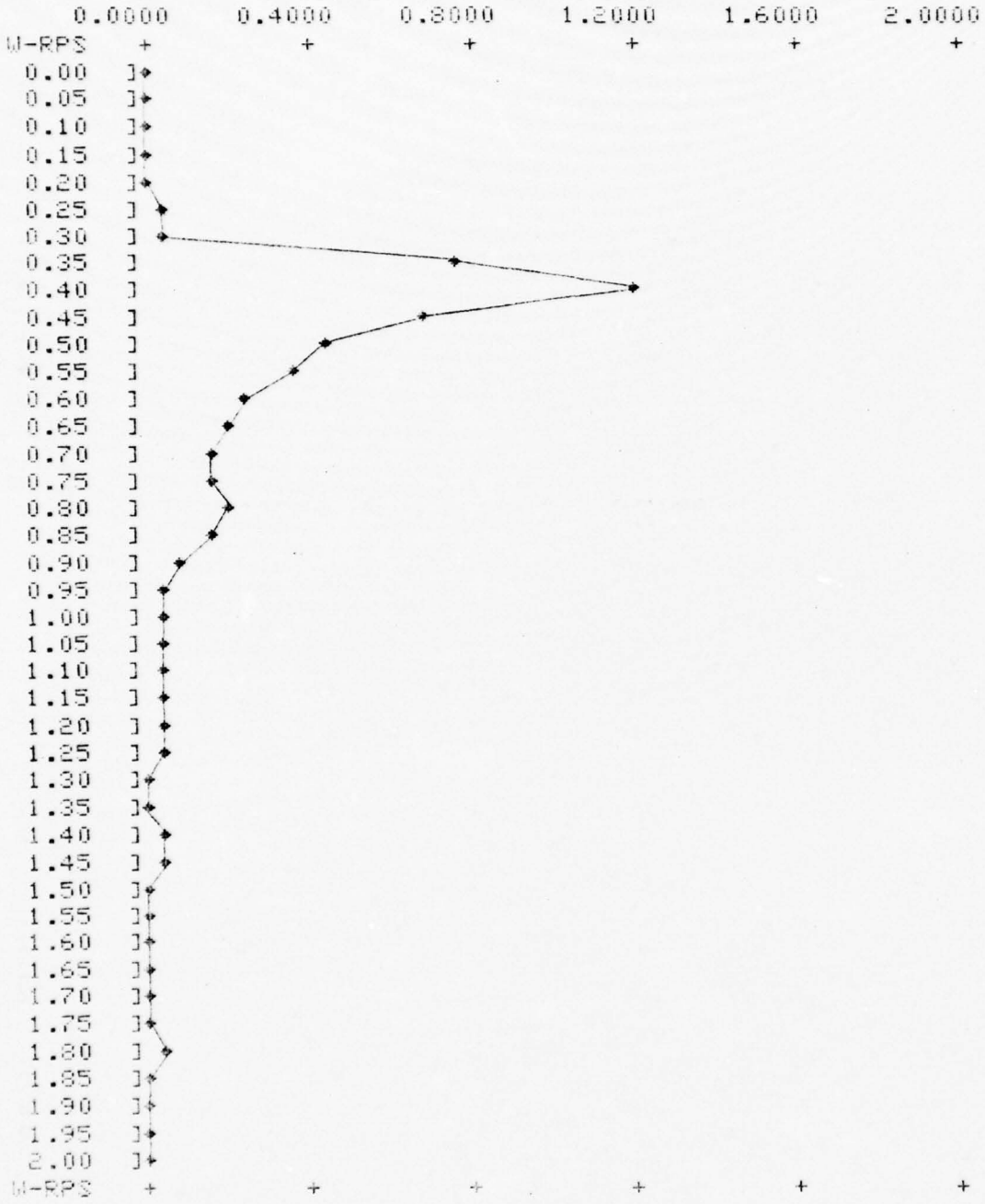
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

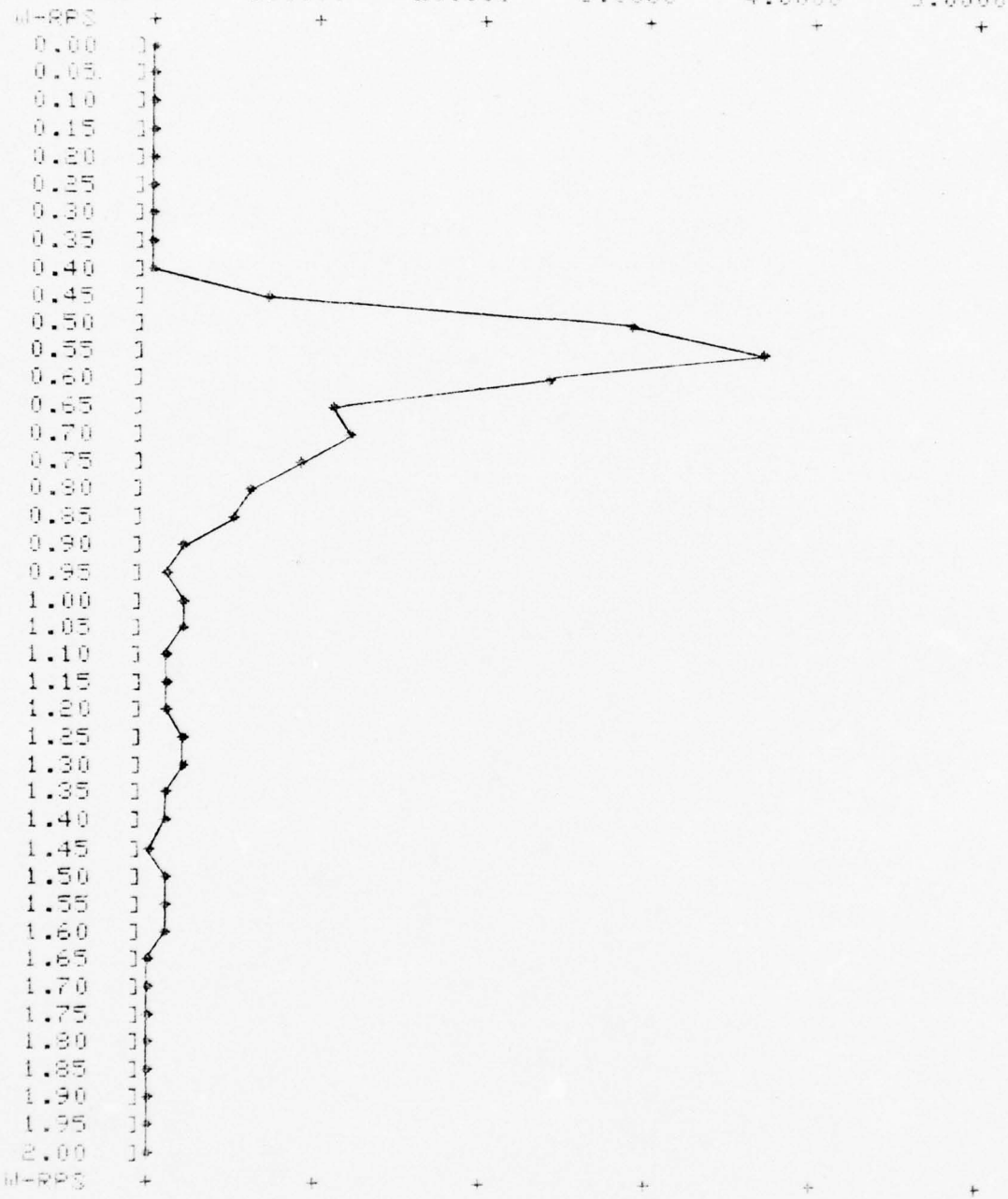
SCALE FOR S2, M**2/RAD



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0011
0.25	0.0205
0.30	0.0524
0.35	0.7756
0.40	1.1986
0.45	0.6830
0.50	0.4311
0.55	0.3548
0.60	0.2473
0.65	0.1820
0.70	0.1770
0.75	0.1527
0.80	0.1979
0.85	0.1753
0.90	0.0683
0.95	0.0466
1.00	0.0260
1.05	0.0204
1.10	0.0243
1.15	0.0300
1.20	0.0289
1.25	0.0338
1.30	0.0159
1.35	0.0183
1.40	0.0299
1.45	0.0296
1.50	0.0007
1.55	0.0054
1.60	0.0105
1.65	0.0095
1.70	0.0083
1.75	0.0151
1.80	0.0209
1.85	0.0099
1.90	0.0000
1.95	0.0000
2.00	0.0000

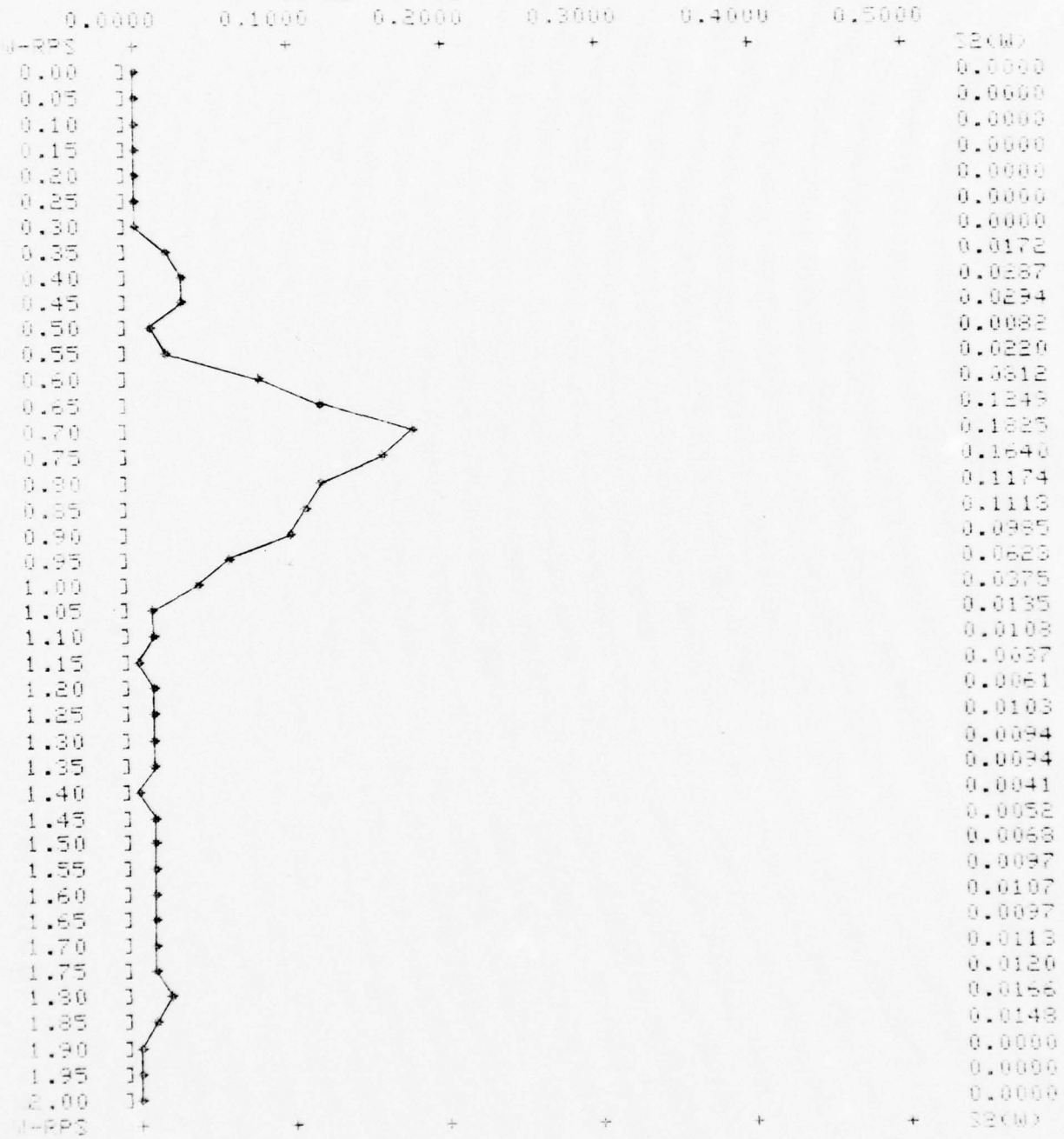
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



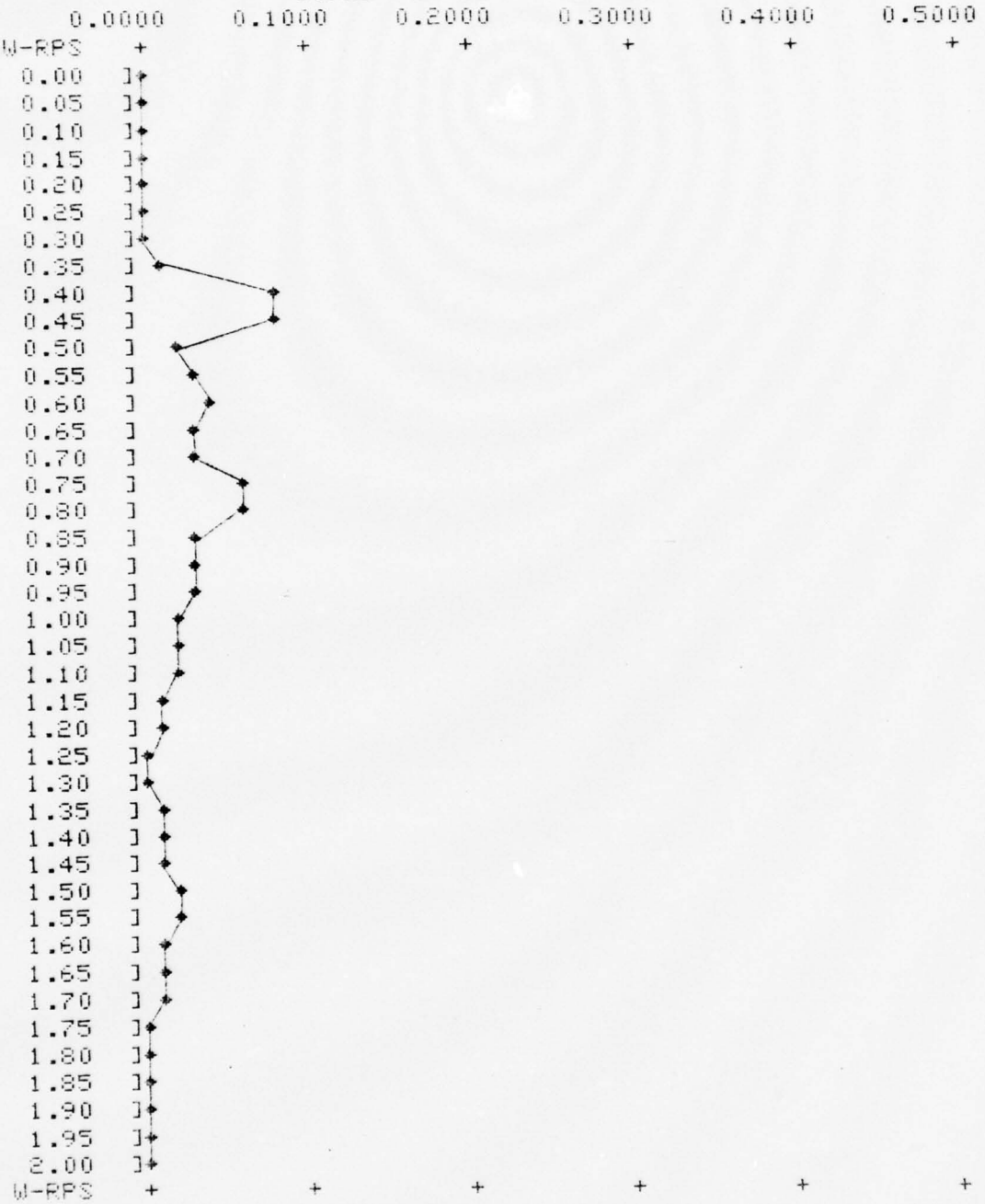
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



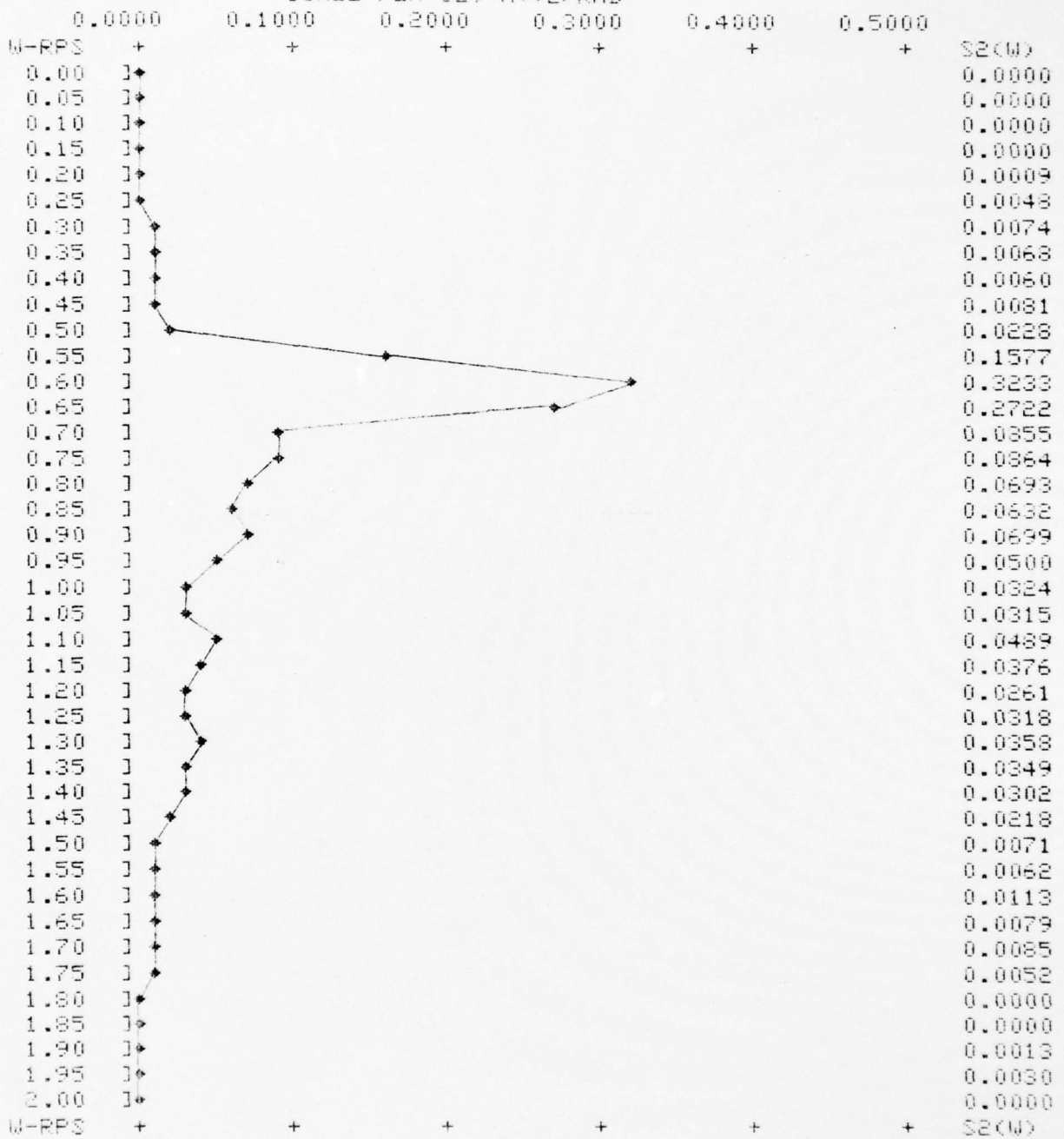
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



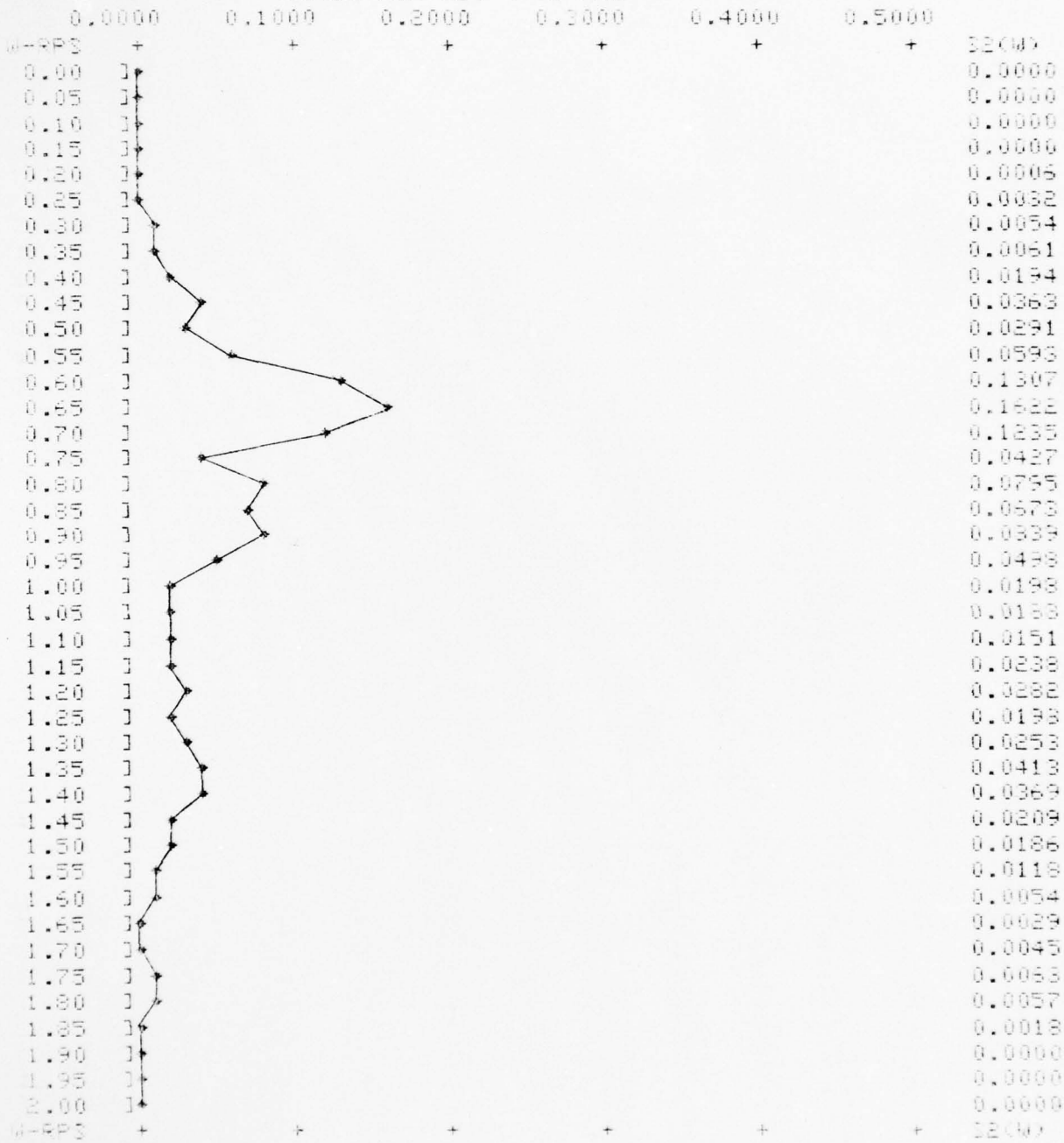
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



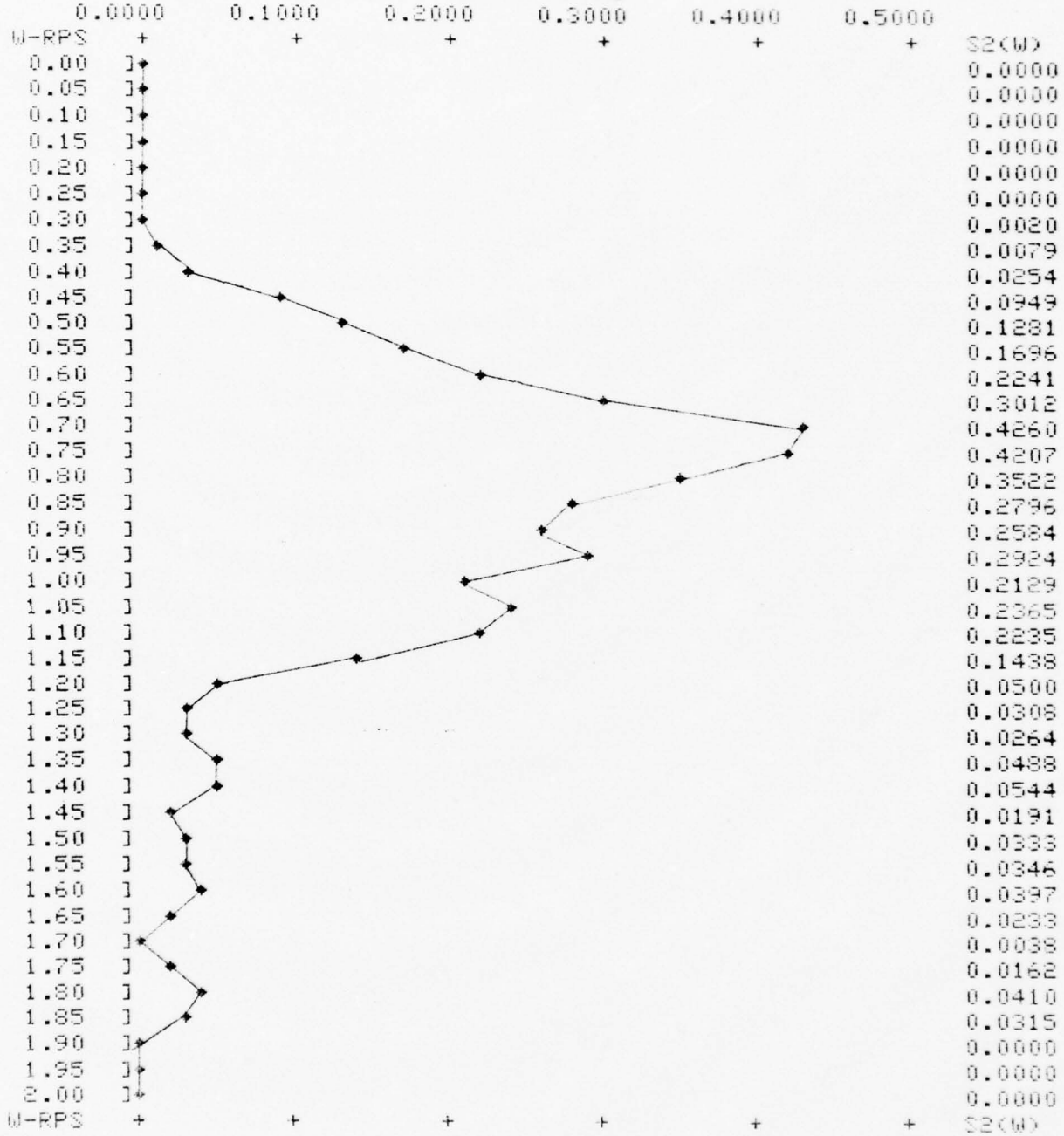
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



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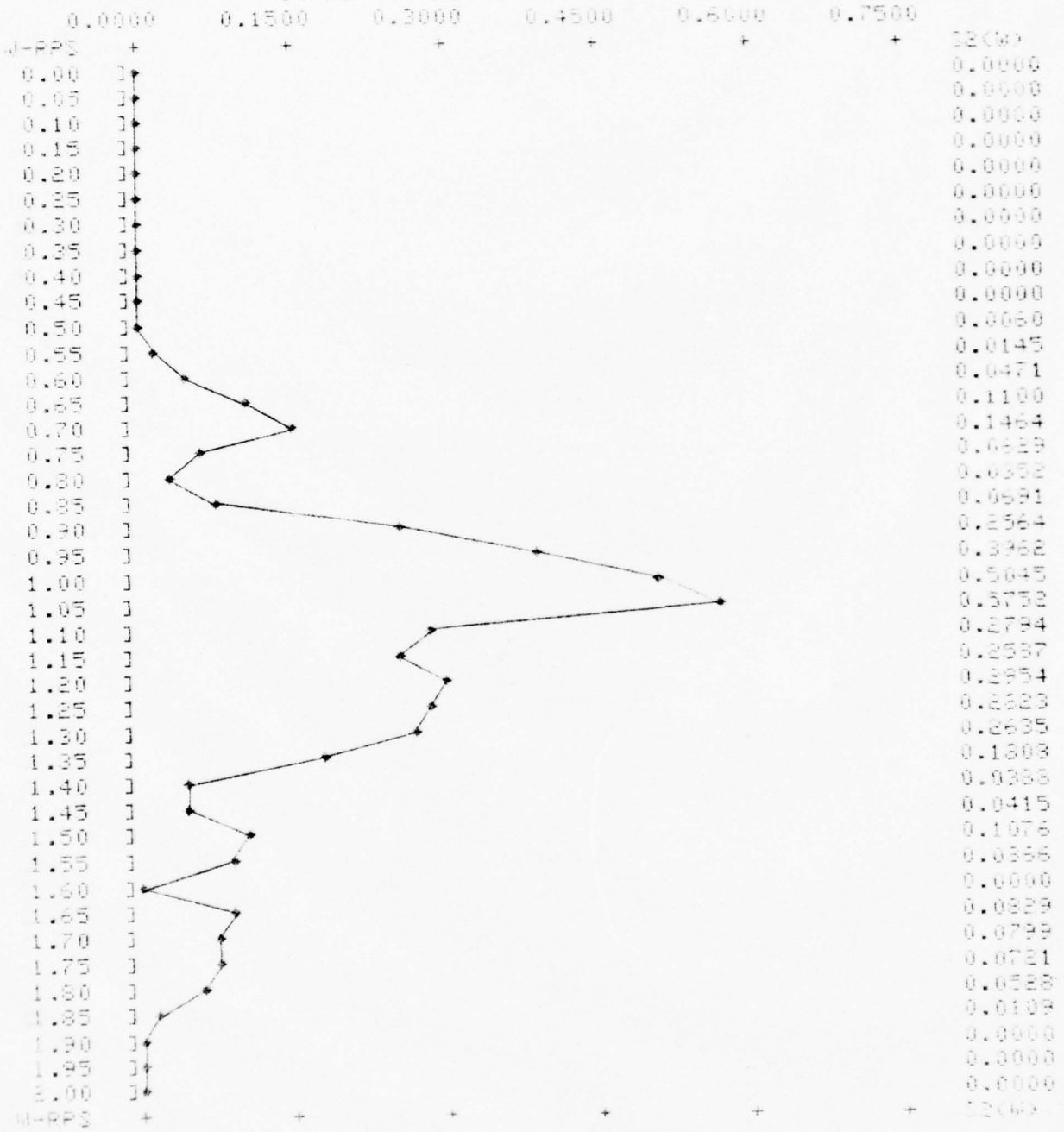
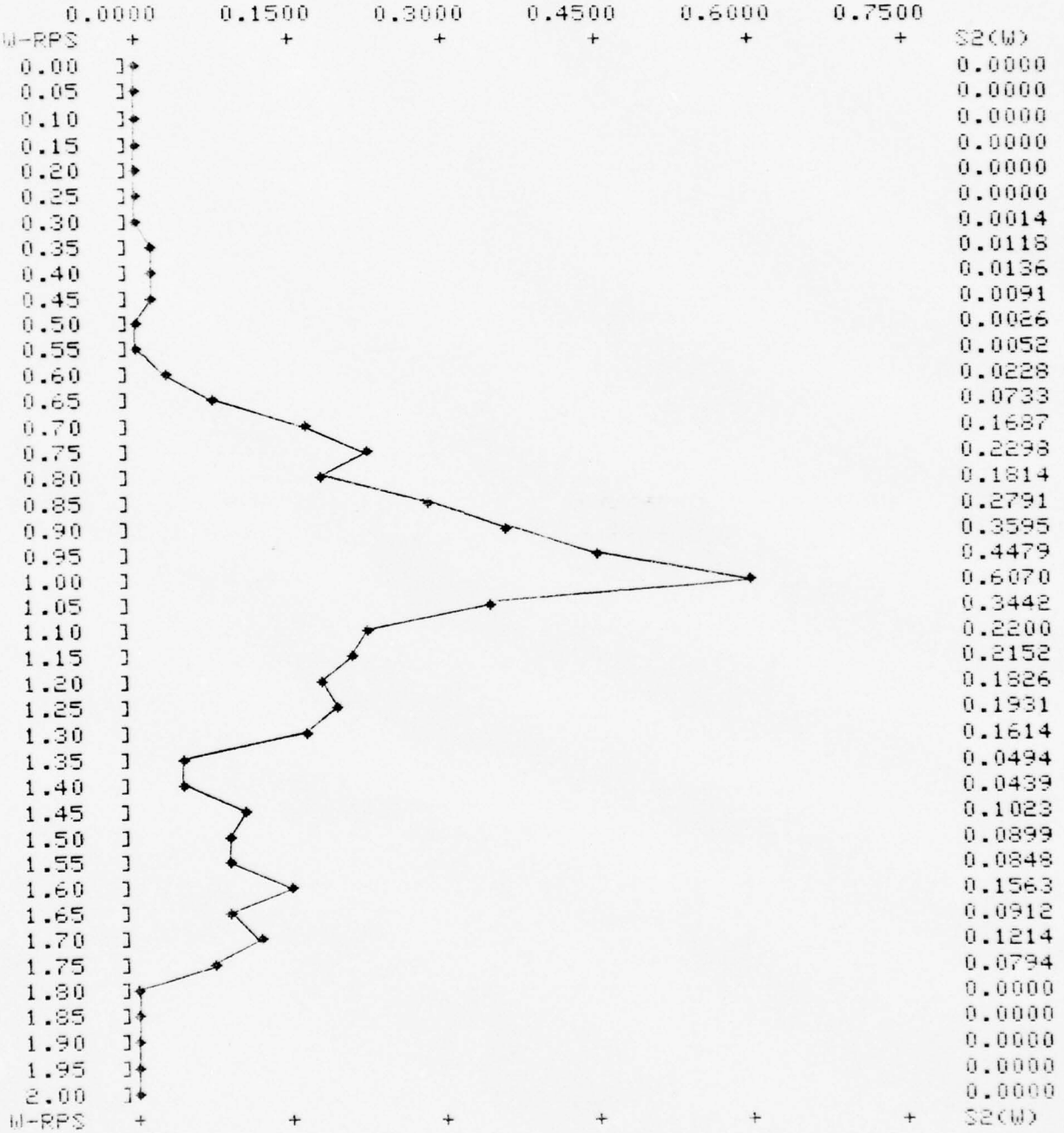
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



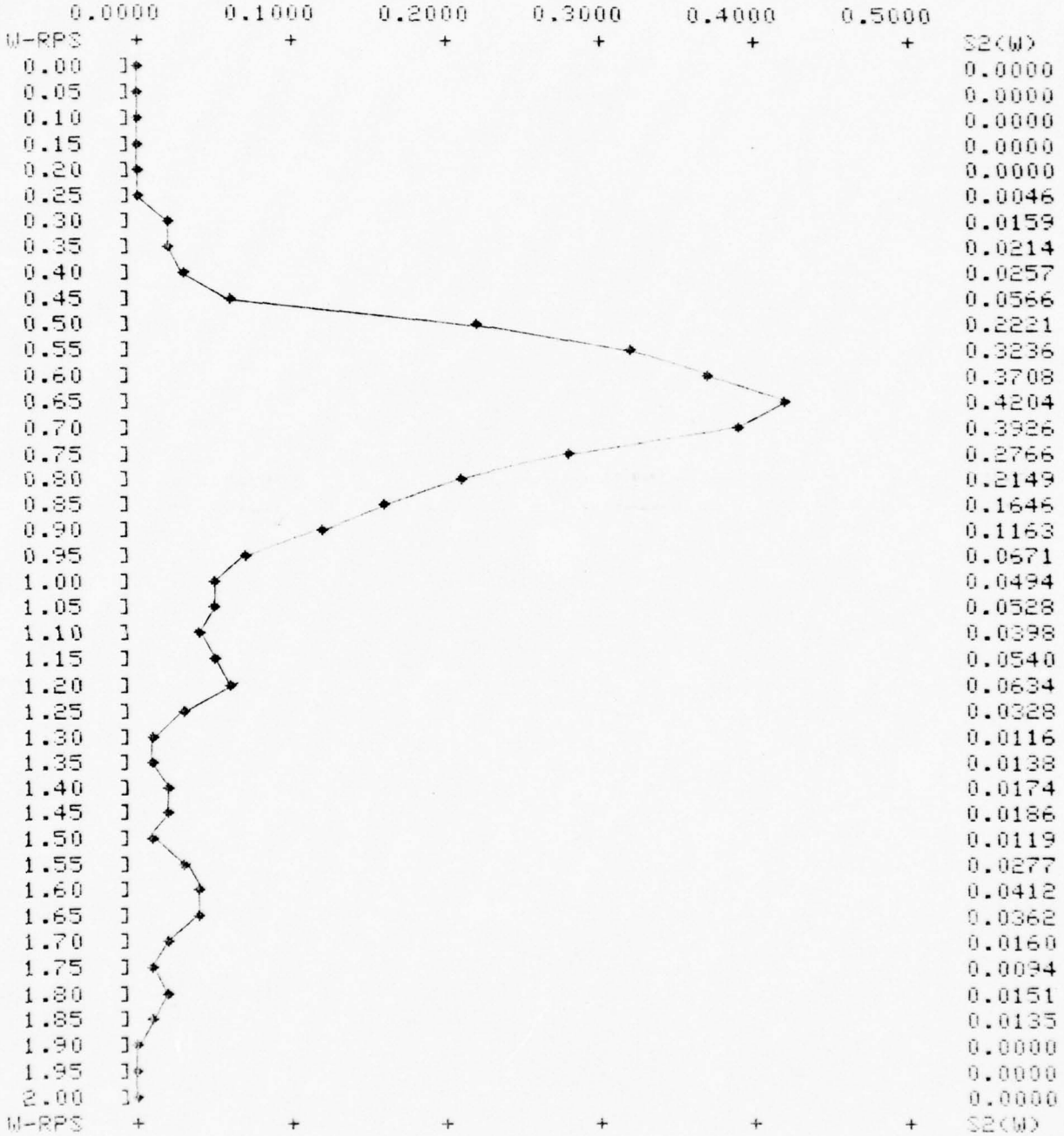
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



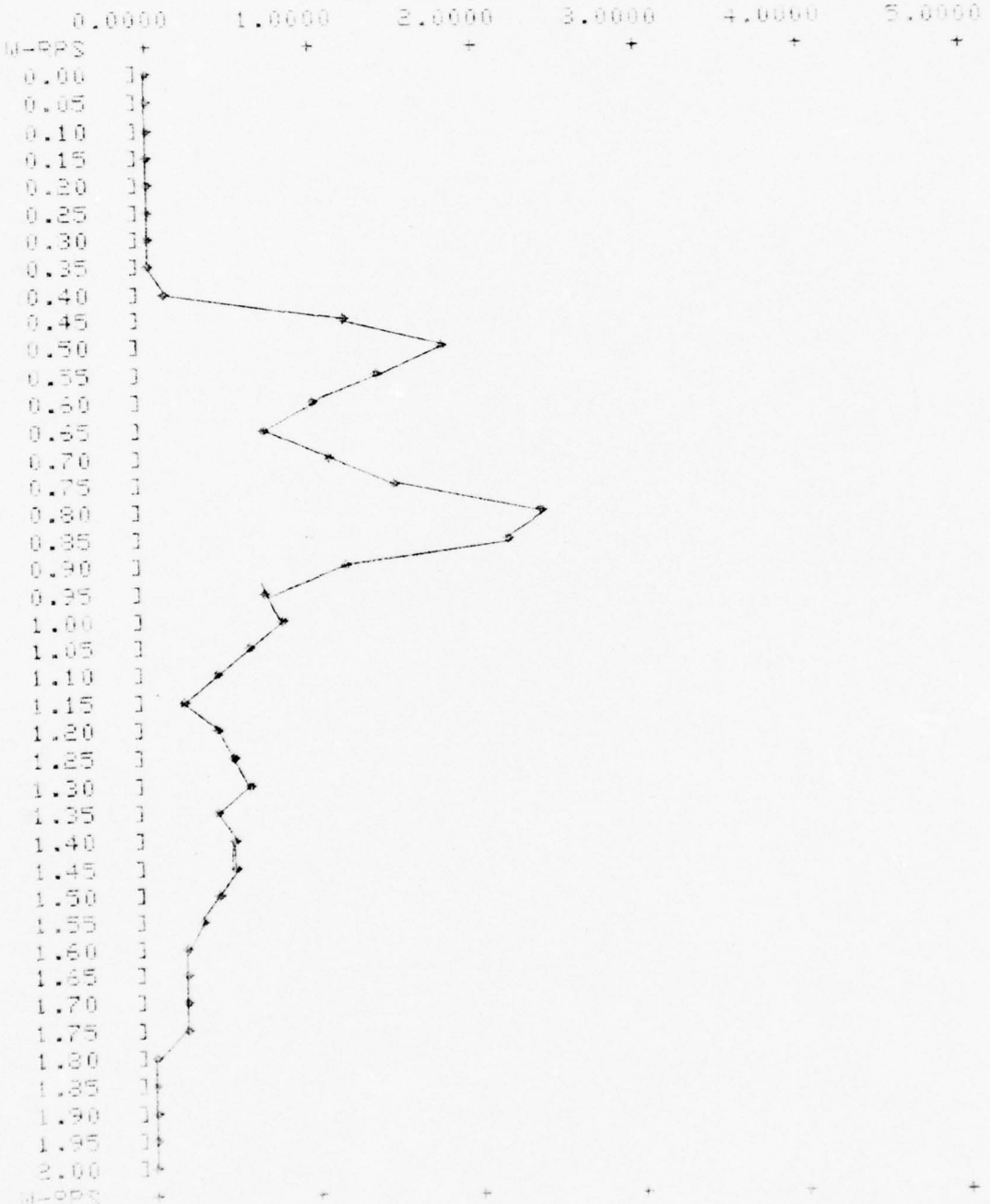
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



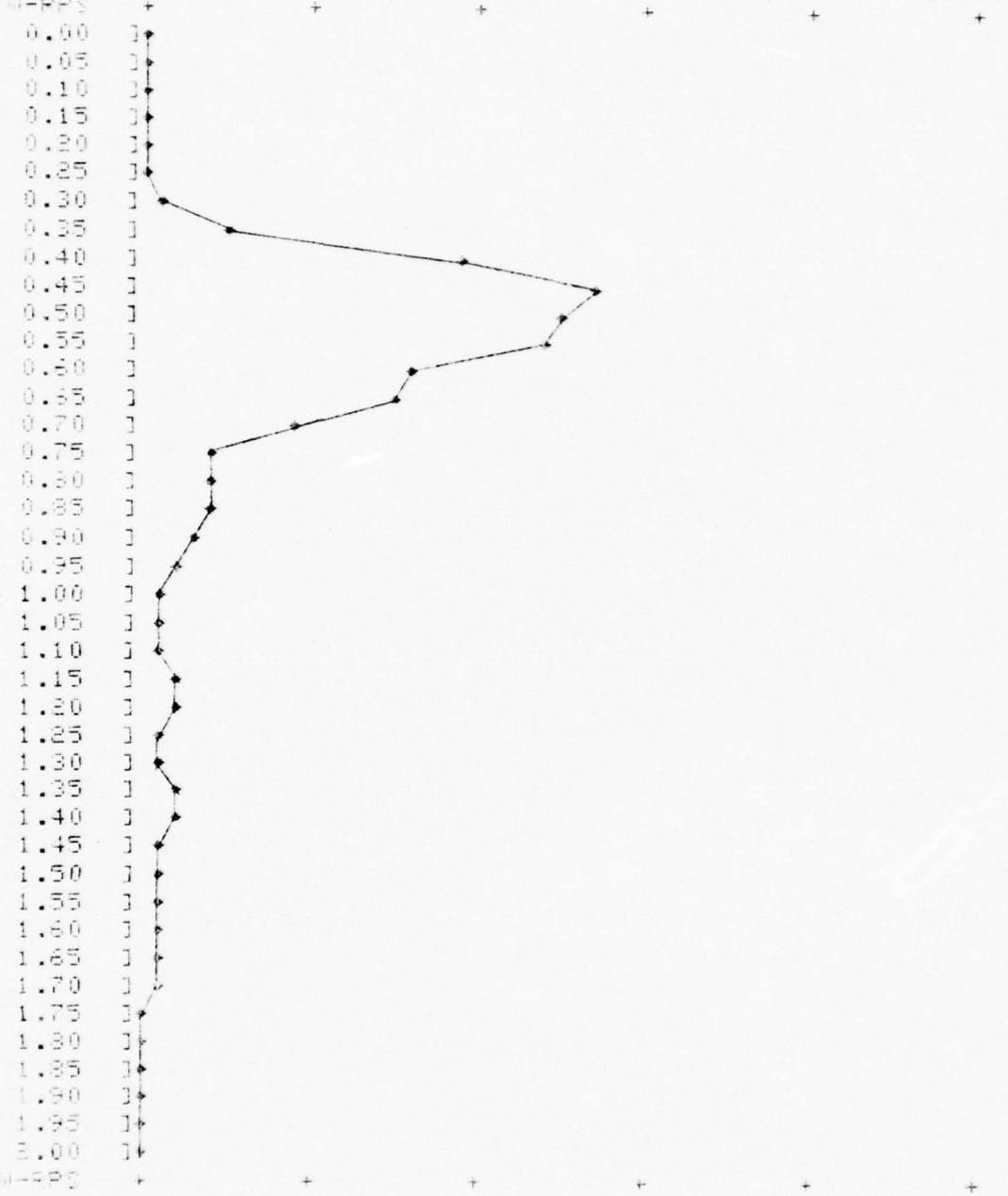
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

W-RPS	0.0000	1.0000	2.0000	3.0000	4.0000	5.0000	S2(W)
0.00	]						0.0000
0.05	]						0.0000
0.10	]						0.0000
0.15	]						0.0000
0.20	]						0.0000
0.25	]						0.0019
0.30	]						0.0346
0.35	]						0.5807
0.40	]						0.3431
0.45	]						1.6761
0.50	]						2.8881
0.55	]						3.4323
0.60	]						3.3841
0.65	]						1.3772
0.70	]						0.5832
0.75	]						0.3638
0.80	]						0.3360
0.85	]						0.3380
0.90	]						0.5056
0.95	]						0.3820
1.00	]						0.3407
1.05	]						0.5622
1.10	]						0.5750
1.15	]						0.3487
1.20	]						0.3368
1.25	]						0.2381
1.30	]						0.2917
1.35	]						0.2436
1.40	]						0.2050
1.45	]						0.0900
1.50	]						0.1000
1.55	]						0.0451
1.60	]						0.0000
1.65	]						0.0082
1.70	]						0.0478
1.75	]						0.0730
1.80	]						0.0700
1.85	]						0.0365
1.90	]						0.0000
1.95	]						0.0000
2.00	]						0.0000
W-RPS							S2(W)

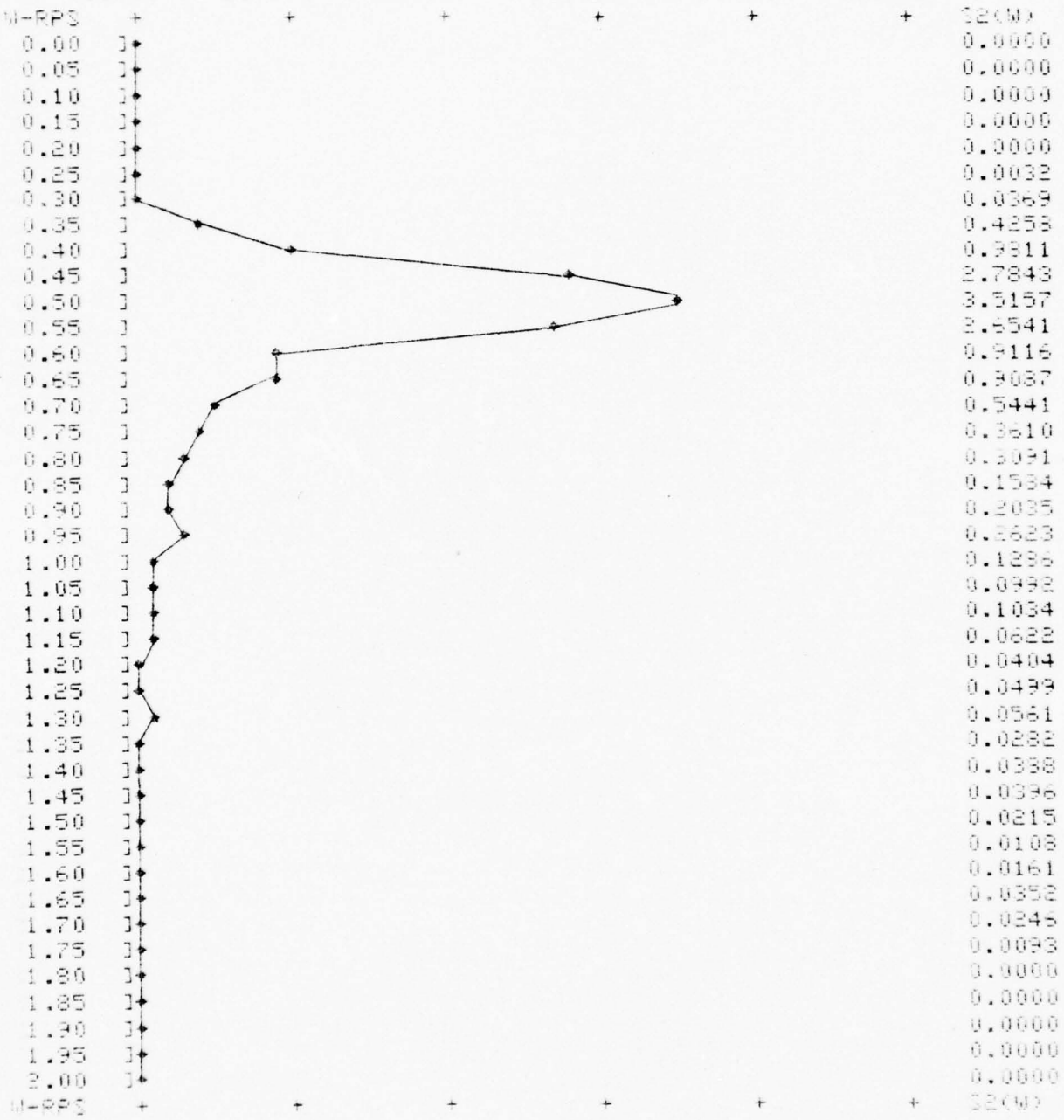
PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD



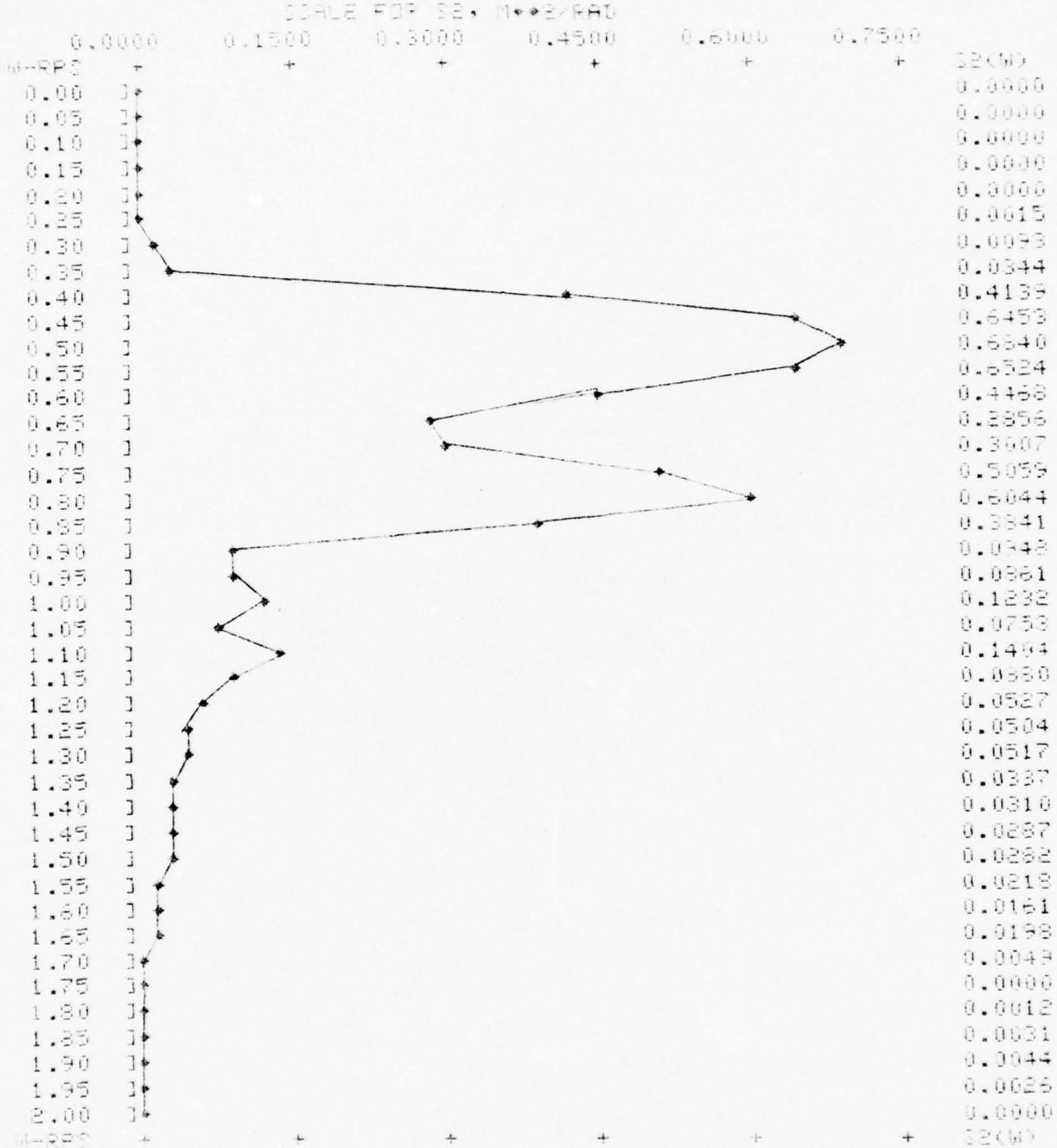
PLOT OF S2 VS. W

SCALE FOR S2: M**2/RAD



PLOT OF S2 VS. W

SCALE FOR S2, M**3/RAD

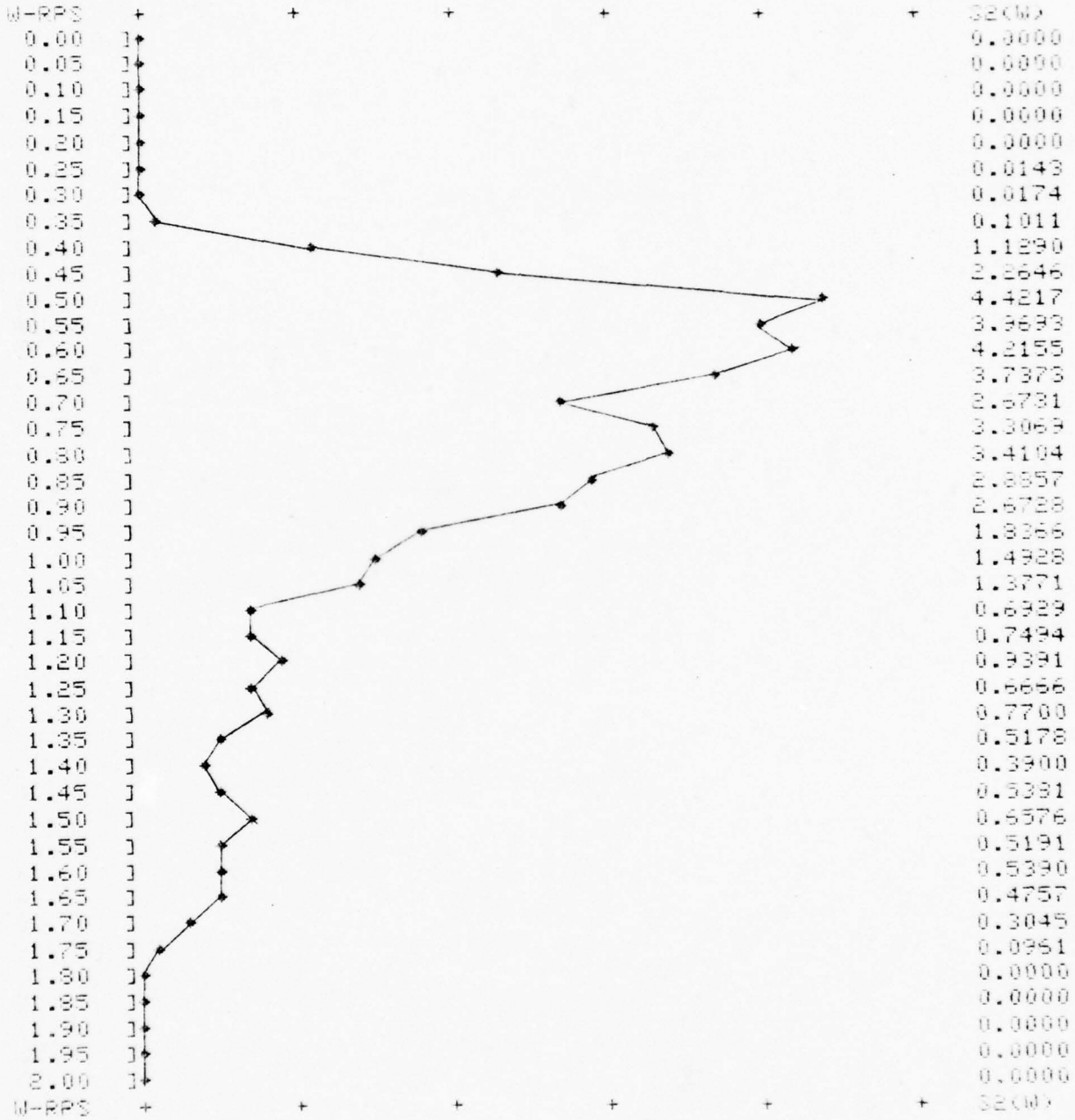


READY

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

0.0000 1.0000 2.0000 3.0000 4.0000 5.0000



W-RPS	S2(W)
0.00	0.0000
0.05	0.0000
0.10	0.0000
0.15	0.0000
0.20	0.0000
0.25	0.0143
0.30	0.0174
0.35	0.1011
0.40	1.1290
0.45	2.8646
0.50	4.4217
0.55	3.9683
0.60	4.2155
0.65	3.7373
0.70	2.6731
0.75	3.3063
0.80	3.4104
0.85	2.8857
0.90	2.6728
0.95	1.8366
1.00	1.4928
1.05	1.3771
1.10	0.6829
1.15	0.7494
1.20	0.9391
1.25	0.6866
1.30	0.7700
1.35	0.5178
1.40	0.3900
1.45	0.5331
1.50	0.6576
1.55	0.5191
1.60	0.5390
1.65	0.4757
1.70	0.3045
1.75	0.0951
1.80	0.0000
1.85	0.0000
1.90	0.0000
1.95	0.0000
2.00	0.0000

W-RPS S2(W)

PLOT OF S2 VS. W

SCALE FOR S2, M**2/RAD

W-RPS	0.0000	2.0000	4.0000	6.0000	8.0000	10.0000	S2(W)
0.00	]						0.0000
0.05	]						0.0000
0.10	]						0.0000
0.15	]						0.0000
0.20	]						0.0262
0.25	]						0.0638
0.30	]						0.0401
0.35	]						0.0317
0.40	]						0.8554
0.45	]						2.5104
0.50	]						4.6211
0.55	]						5.8990
0.60	]						5.2131
0.65	]						2.7280
0.70	]						1.4107
0.75	]						0.8447
0.80	]						0.7475
0.85	]						1.3748
0.90	]						0.9575
0.95	]						0.5221
1.00	]						0.3601
1.05	]						0.2730
1.10	]						0.2368
1.15	]						0.2748
1.20	]						0.3738
1.25	]						0.3868
1.30	]						0.2908
1.35	]						0.1383
1.40	]						0.2461
1.45	]						0.2393
1.50	]						0.0834
1.55	]						0.1652
1.60	]						0.2067
1.65	]						0.2436
1.70	]						0.2238
1.75	]						0.1305
1.80	]						0.0195
1.85	]						0.0000
1.90	]						0.0000
1.95	]						0.0000
2.00	]						0.0000
W-RPS							S2(W)

Appendix B

Spectral Families

A. Wave Height Basis
B. Period Basis

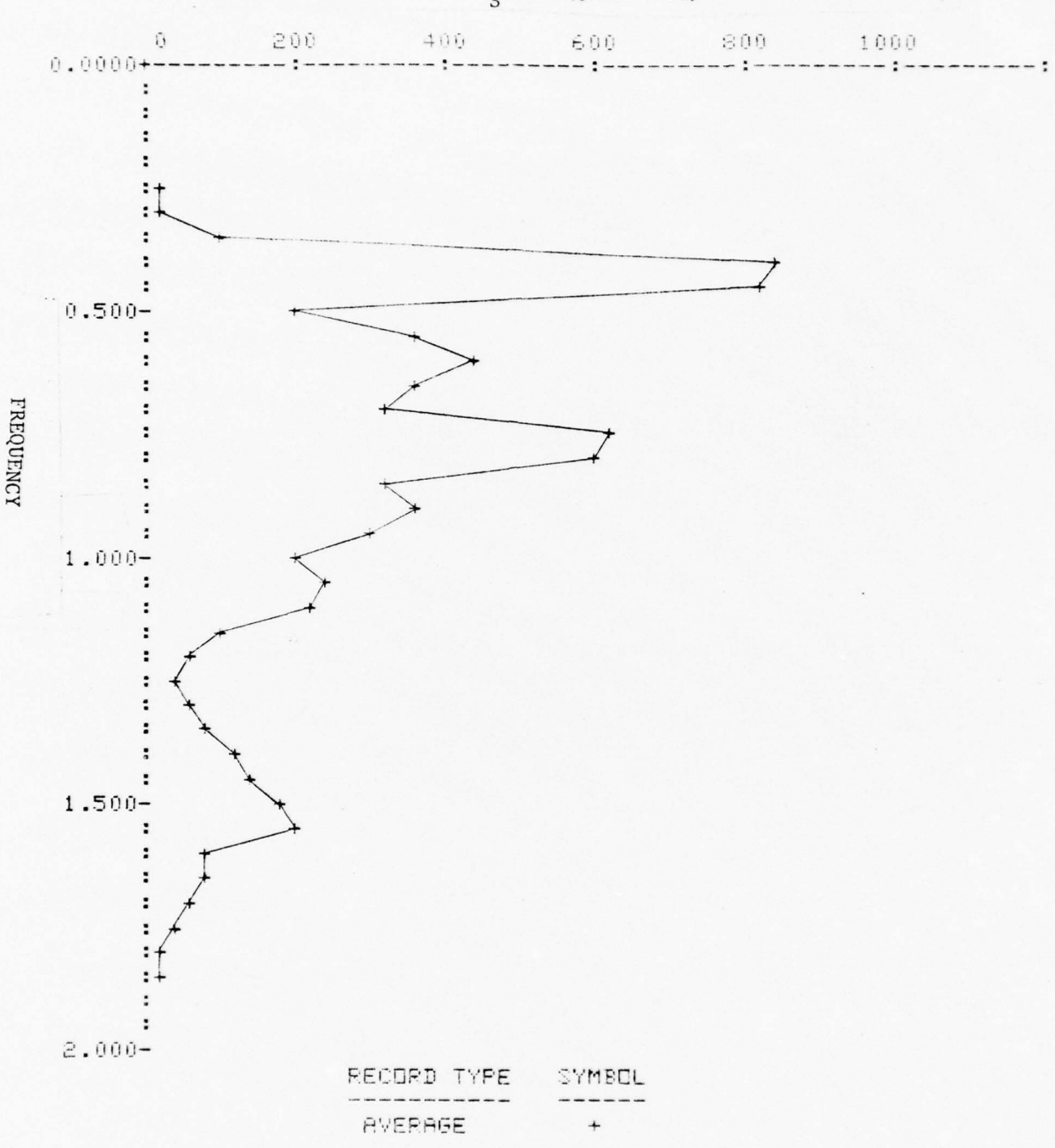
Group Based on

Wave Height Sorting

RECORD NUMBERS , GROUP NO. 1:
80

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.247	0.0000	0.0000	0.0000	0.0000
0.250	0.309	0.0172	0.0000	0.0000	0.0000
0.300	0.371	0.0258	0.0000	0.0000	0.0000
0.350	0.433	0.0904	0.0000	0.0000	0.0000
0.400	0.494	0.8385	0.0000	0.0000	0.0000
0.450	0.556	0.8277	0.0000	0.0000	0.0000
0.500	0.618	0.1916	0.0000	0.0000	0.0000
0.550	0.680	0.3617	0.0000	0.0000	0.0000
0.600	0.741	0.4392	0.0000	0.0000	0.0000
0.650	0.803	0.3595	0.0000	0.0000	0.0000
0.700	0.865	0.3218	0.0000	0.0000	0.0000
0.750	0.927	0.6135	0.0000	0.0000	0.0000
0.800	0.989	0.6006	0.0000	0.0000	0.0000
0.850	1.050	0.3132	0.0000	0.0000	0.0000
0.900	1.112	0.3563	0.0000	0.0000	0.0000
0.950	1.174	0.2917	0.0000	0.0000	0.0000
1.000	1.236	0.1927	0.0000	0.0000	0.0000
1.050	1.298	0.2390	0.0000	0.0000	0.0000
1.100	1.359	0.2131	0.0000	0.0000	0.0000
1.150	1.421	0.1023	0.0000	0.0000	0.0000
1.200	1.483	0.0657	0.0000	0.0000	0.0000
1.250	1.545	0.0420	0.0000	0.0000	0.0000
1.300	1.607	0.0538	0.0000	0.0000	0.0000
1.350	1.668	0.0818	0.0000	0.0000	0.0000
1.400	1.730	0.1206	0.0000	0.0000	0.0000
1.450	1.792	0.1345	0.0000	0.0000	0.0000
1.500	1.854	0.1765	0.0000	0.0000	0.0000
1.550	1.916	0.2045	0.0000	0.0000	0.0000
1.600	1.977	0.0764	0.0000	0.0000	0.0000
1.650	2.039	0.0797	0.0000	0.0000	0.0000
1.700	2.101	0.0667	0.0000	0.0000	0.0000
1.750	2.163	0.0334	0.0000	0.0000	0.0000
1.800	2.224	0.0258	0.0000	0.0000	0.0000
1.850	2.286	0.0161	0.0000	0.0000	0.0000

H(1/3)	2.4615	MOM-M(-1)	0.5641
PERIOD-T1	7.7649	AREA-M0	0.3787
PERIOD-T-1	9.3606	1ST MOM-M1	0.3064
PERIOD-T2	7.0862	2ND MOM-M2	0.2977
PERIOD-T4	5.2357	3RD MOM-M3	0.3373
HC(1/3)	2.1641	4TH MOM-M4	0.4288
B	2.0767		
E	0.6739		
D	0.8792		
MAX. FREQ.	0.4000		
H1/3/LAMBDA	0.0019		
STD. DEV.M0	0.0000		

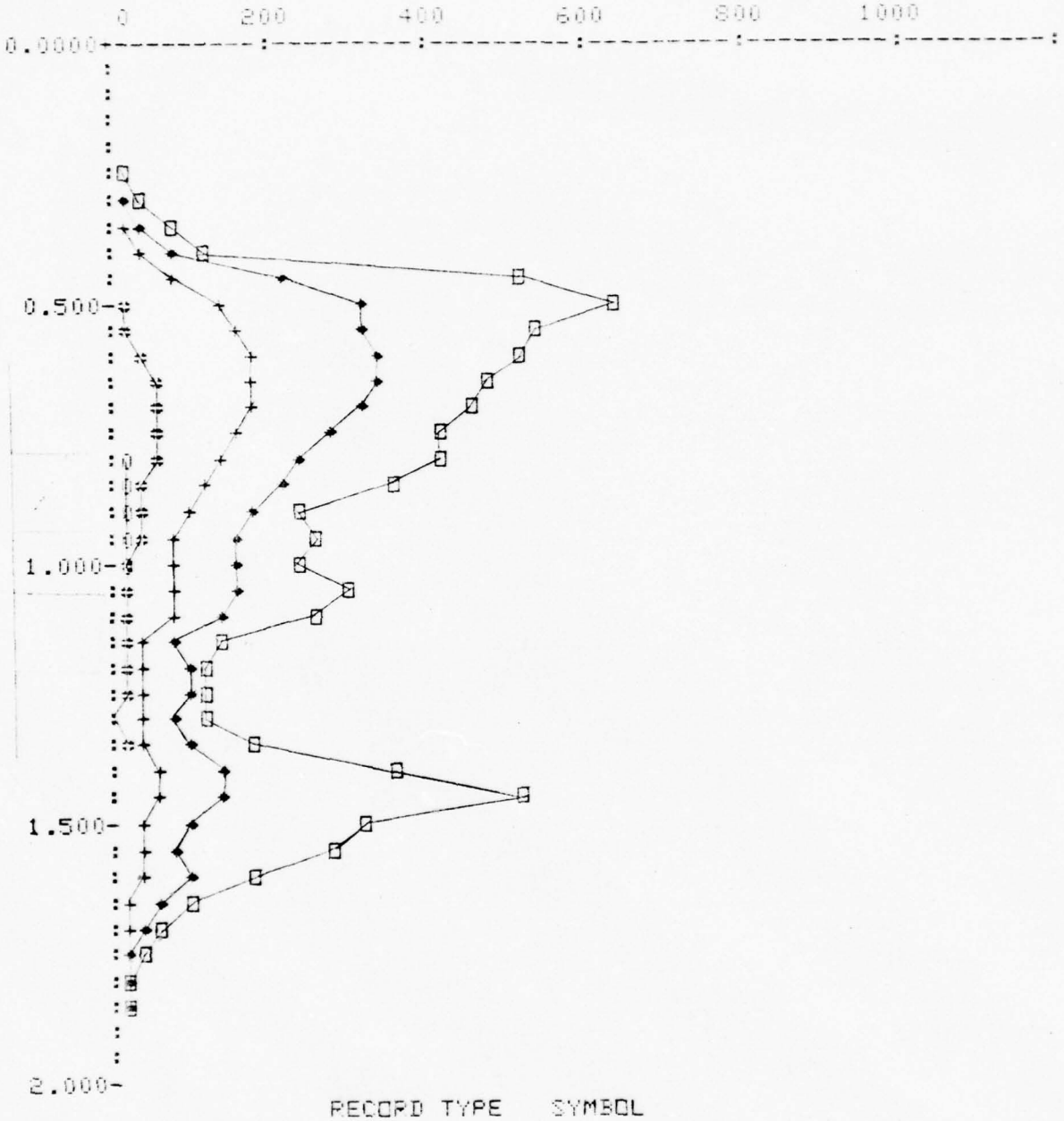

SPECTRAL ORDINATE (FT^2-SEC) (].0E + 03)
0
200
400
600
800
1000
0.0000
0.500
1.000
1.500
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
+

RECORD NUMBERS , GROUP NO. 2:
1 6 9 22 23 24 37 47 48 49 50 51 61 74 75
79 81 82 86

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.229	0.0058	0.0141	0.0183	0.0000
0.250	0.286	0.0274	0.0370	0.0678	0.0009
0.300	0.343	0.0632	0.0745	0.1423	0.0045
0.350	0.400	0.1797	0.2040	0.4106	0.0167
0.400	0.457	0.3644	0.3436	0.8080	0.0387
0.450	0.515	0.8970	1.2361	2.2082	0.0831
0.500	0.572	1.3108	1.5984	3.1692	0.1459
0.550	0.629	1.5471	1.3926	3.1891	0.2341
0.600	0.686	1.8670	1.3390	3.4159	0.4668
0.650	0.743	1.8834	1.3332	3.4830	0.5206
0.700	0.800	1.7888	1.1812	3.1612	0.6435
0.750	0.858	1.6328	1.0146	2.7516	0.5811
0.800	0.915	1.4191	0.9400	2.4744	0.5617
0.850	0.972	1.2248	0.8089	2.1562	0.4616
0.900	1.029	1.0922	0.6329	1.8205	0.4774
0.950	1.086	0.8872	0.6192	1.5850	0.3986
1.000	1.143	0.7883	0.6407	1.6099	0.2824
1.050	1.201	0.7811	0.7091	1.5787	0.2476
1.100	1.258	0.7109	0.6377	1.4156	0.1955
1.150	1.315	0.4953	0.3371	0.8782	0.1746
1.200	1.372	0.4537	0.3542	0.9015	0.1267
1.250	1.429	0.4434	0.3540	0.9221	0.1121
1.300	1.487	0.3716	0.3296	0.7610	0.0911
1.350	1.544	0.4479	0.4585	0.9605	0.1078
1.400	1.601	0.5612	0.8163	1.3008	0.0992
1.450	1.658	0.5274	1.1387	1.3322	0.0838
1.500	1.715	0.3660	0.7069	0.9216	0.0438
1.550	1.772	0.3495	0.6017	0.8679	0.0361
1.600	1.830	0.3652	0.4540	0.9049	0.0373
1.650	1.887	0.2916	0.3144	0.6885	0.0352
1.700	1.944	0.2035	0.1909	0.4410	0.0357
1.750	2.001	0.1205	0.1137	0.2657	0.0188
1.800	2.058	0.0701	0.0857	0.1830	0.0000
1.850	2.115	0.0348	0.0544	0.1042	0.0000

H(1/3)	4.3461	MOM-M(-1)	1.5586
PERIOD-T1	7.1848	AREA-M0	1.1805
PERIOD-T-1	8.2956	1ST MOM-M1	1.0324
PERIOD-T2	6.6905	2ND MOM-M2	1.0412
PERIOD-T4	5.2212	3RD MOM-M3	1.1914
HC(1/3)	3.8982	4TH MOM-M4	1.5078
B	1.1214		
E	0.6253		
D	0.8969		
MAX. FREQ.	0.6500		
H1/3/LAMBDA	0.0091		
STD. DEV.M0	0.3626		

SPECTRAL ORDINATE (FT^2-SEC) (].0E + 02)



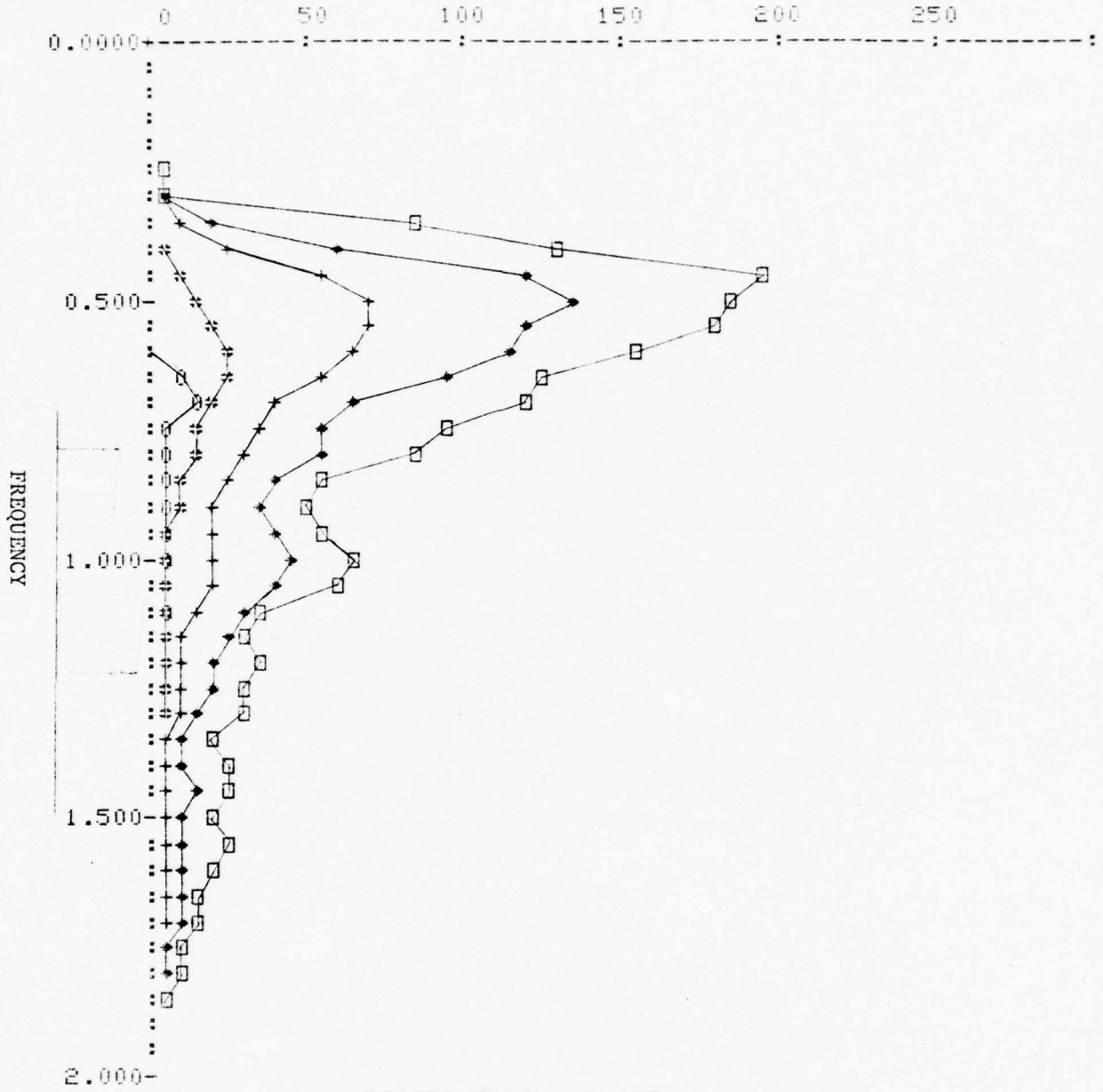
RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	*
LOWEST-1/3	#
HIGHEST	□
LOWEST	0

RECORD NUMBERS , GROUP NO. 3:
2 3 5 7 15 19 25 26 28 29 30 31 34 35 39
44 45 76 77 83 84 85 91

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.262	0.0158	0.0237	0.0440	0.0000
0.250	0.328	0.0800	0.0925	0.1835	0.0052
0.300	0.393	0.1742	0.1712	0.3660	0.0207
0.350	0.459	0.8327	1.6552	1.9376	0.1119
0.400	0.524	2.4797	3.0227	5.7809	0.3093
0.450	0.590	5.4612	5.6008	12.0291	0.7798
0.500	0.655	6.9958	5.5610	13.2675	1.3864
0.550	0.721	6.9650	4.5344	11.9972	2.2218
0.600	0.786	6.6208	4.1393	11.4099	2.6689
0.650	0.852	5.5448	3.3185	9.4910	2.3033
0.700	0.918	4.2304	2.3439	6.5608	2.1435
0.750	0.983	3.3941	1.9576	5.4115	1.6689
0.800	1.049	3.1757	1.8888	5.2581	1.4237
0.850	1.114	2.5860	1.3701	4.1014	1.1236
0.900	1.180	2.0724	1.1015	3.3044	1.0138
0.950	1.245	2.1022	1.4263	3.7992	0.7462
1.000	1.311	2.1245	1.8155	4.2894	0.6351
1.050	1.376	1.8298	1.6493	3.7586	0.5342
1.100	1.442	1.5157	1.0359	2.7773	0.5246
1.150	1.507	1.2213	0.3917	2.2856	0.3547
1.200	1.573	1.1242	0.9838	2.1762	0.3430
1.250	1.638	1.1001	0.7921	1.9901	0.3762
1.300	1.704	0.8868	0.6221	1.5883	0.3300
1.350	1.770	0.6873	0.4872	1.2212	0.2488
1.400	1.835	0.6071	0.5164	1.1244	0.2075
1.450	1.901	0.6546	0.5722	1.2699	0.1764
1.500	1.966	0.5978	0.4809	1.1478	0.1370
1.550	2.032	0.5011	0.5255	1.0312	0.1113
1.600	2.097	0.5249	0.6133	1.1649	0.1122
1.650	2.163	0.4429	0.4146	0.9196	0.1088
1.700	2.228	0.3692	0.3521	0.7777	0.0697
1.750	2.294	0.3104	0.3271	0.6796	0.0357
1.800	2.359	0.2186	0.2484	0.4887	0.0108
1.850	2.425	0.0669	0.1021	0.1798	0.0000

H(1/3)	7.3497	MOM-M(-1)	5.1058
PERIOD-T1	8.2359	AREA-M0	3.3761
PERIOD-T-1	9.5023	1ST MOM-M1	2.5757
PERIOD-T2	7.6090	2ND MOM-M2	2.3021
PERIOD-T4	5.6569	3RD MOM-M3	2.3977
HC(1/3)	6.4759	4TH MOM-M4	2.8400
B	0.6865		
E	0.6688		
D	0.8811		
MAX. FREQ.	0.5000		
H1/3/LAMBDA	0.0091		
STD. DEV.M0	1.3263		

SPECTRAL ORDINATE (FT^2-SEC) (1.0E + 01)



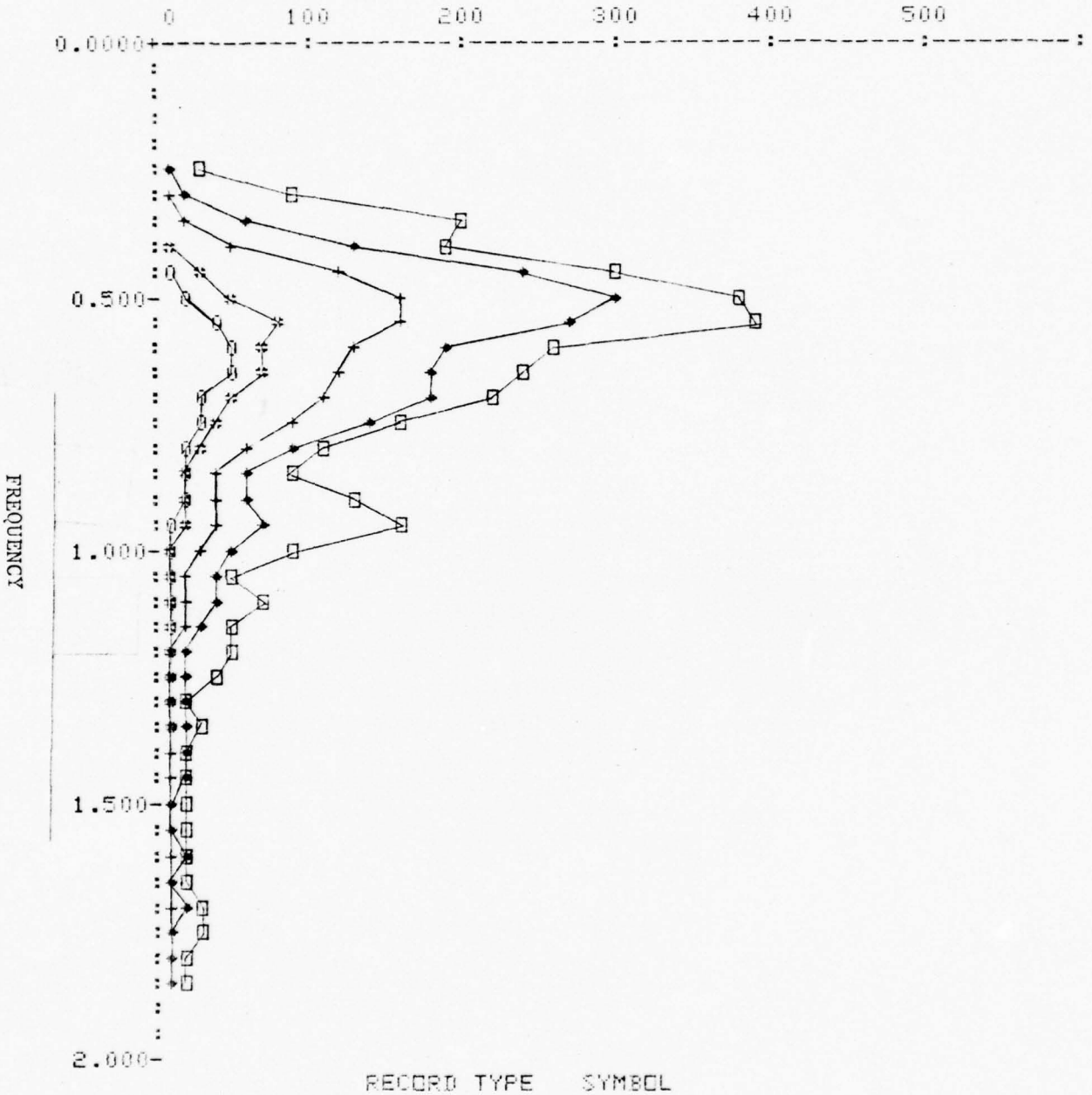
RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	*
LOWEST-1/3	#
HIGHEST	□
LOWEST	0

RECORD NUMBERS - GROUP NO. 4:
4 8 27 33 36 40 46 52 53 56 59 60 70 72 78
90

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.279	0.0385	0.0543	0.1100	0.0000
0.250	0.349	0.3568	0.7792	0.9042	0.0372
0.300	0.418	0.8155	2.0774	2.1052	0.1290
0.350	0.488	2.4151	4.6923	6.3993	0.3175
0.400	0.558	5.1455	5.7467	12.7825	0.6816
0.450	0.628	12.0093	9.0415	23.5050	2.5766
0.500	0.697	16.2676	10.7512	30.0263	4.7195
0.550	0.767	16.2128	9.0984	27.2549	7.6830
0.600	0.837	12.7862	5.6180	19.3921	6.7244
0.650	0.906	11.9694	5.1756	18.3270	6.8447
0.700	0.976	11.0569	5.3991	17.5154	4.8308
0.750	1.046	8.8562	4.2137	13.7941	3.8957
0.800	1.116	6.1221	2.4593	8.5439	3.0434
0.850	1.185	4.0191	1.8086	5.9580	2.2148
0.900	1.255	3.7049	2.5543	6.1548	2.0227
0.950	1.325	3.6824	3.3581	6.7130	1.6299
1.000	1.395	2.7991	1.7926	4.7817	1.3235
1.050	1.464	2.3338	1.1838	3.6005	1.0540
1.100	1.534	2.1568	1.4415	3.7753	0.9683
1.150	1.604	1.5789	1.2649	2.9420	0.7171
1.200	1.673	1.3825	1.0944	2.3674	0.6814
1.250	1.743	1.3090	0.8655	2.1924	0.5830
1.300	1.813	1.1612	0.5139	1.8027	0.6002
1.350	1.883	1.2298	0.6926	2.0171	0.5543
1.400	1.952	1.1572	0.6931	2.0120	0.4517
1.450	2.022	0.9155	0.6294	1.6835	0.2885
1.500	2.092	0.7969	0.4604	1.2986	0.2766
1.550	2.162	0.7719	0.5577	1.4350	0.1873
1.600	2.231	0.8316	0.6546	1.6557	0.1959
1.650	2.301	0.6962	0.6012	1.3982	0.1001
1.700	2.371	0.6943	0.7607	1.5207	0.0738
1.750	2.440	0.6542	0.7406	1.4656	0.1225
1.800	2.510	0.4721	0.6187	1.2238	0.0192
1.850	2.580	0.1794	0.4046	0.5494	0.0000

H(1/3)	10.4527	MOM-M(-1)	10.8748
PERIOD-T1	8.7620	AREA-M0	6.8286
PERIOD-T-1	10.0061	1ST MOM-M1	4.8968
PERIOD-T2	8.0966	2ND MOM-M2	4.1123
PERIOD-T4	5.8637	3RD MOM-M3	4.0844
HC(1/3)	9.1259	4TH MOM-M4	4.7218
B	0.4898		
E	0.6896		
D	0.8731		
MAX. FREQ.	0.5000		
H1/3/LAMBDA	0.0189		
STD. DEV.M0	4.2032		

SPECTRAL ORDINATE (FT^2-SEC) (1.0E + 01)

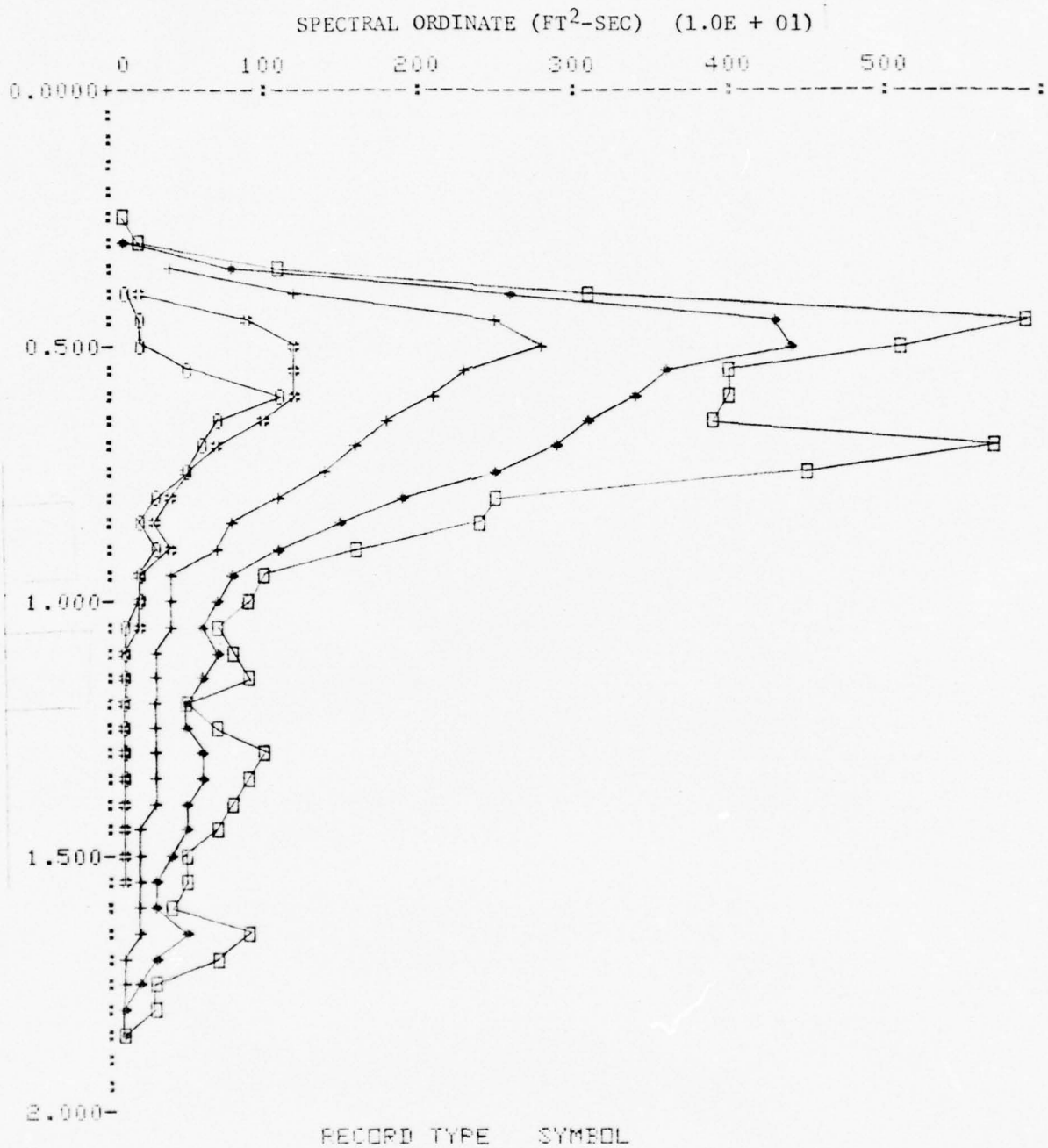


RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	*
LOWEST-1/3	#
HIGHEST	□
LOWEST	0

RECORD NUMBERS , GROUP NO. 5:
10 17 18 20 38 41 57 58 69 71 87 88 89

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.275	0.0230	0.0368	0.0748	0.0000
0.250	0.344	0.2342	0.2125	0.4986	0.0180
0.300	0.413	0.6837	0.6142	1.4152	0.2260
0.350	0.481	3.8730	3.6034	8.3078	0.4841
0.400	0.550	12.3365	10.0590	25.5413	1.7968
0.450	0.619	25.0106	15.3174	42.6299	9.3220
0.500	0.688	27.6530	13.7699	43.5990	11.9602
0.550	0.756	22.8551	10.1365	35.8708	12.3216
0.600	0.825	20.9194	9.7220	33.8617	11.6871
0.650	0.894	18.3670	9.6138	30.7125	9.6716
0.700	0.963	15.7564	13.0153	29.2602	6.7917
0.750	1.031	13.8403	10.4443	25.1462	5.1451
0.800	1.100	10.9139	6.7651	19.2151	4.4013
0.850	1.169	8.3649	5.7320	14.8476	3.4377
0.900	1.238	6.8891	3.7447	11.2461	3.6142
0.950	1.306	4.4379	2.9249	8.1165	1.8199
1.000	1.375	3.7856	2.1805	6.5277	1.7273
1.050	1.444	3.6975	1.9597	6.1941	1.7120
1.100	1.513	3.4945	2.3865	6.7080	1.4572
1.150	1.581	3.4725	2.3802	6.3458	1.4375
1.200	1.650	3.1869	1.4738	4.7705	1.3751
1.250	1.719	2.7405	1.9910	5.2485	0.9122
1.300	1.788	2.7557	2.5857	5.8698	0.8097
1.350	1.856	2.6966	2.3137	5.5364	0.8641
1.400	1.925	2.6561	2.2279	5.4495	0.9391
1.450	1.994	2.2701	2.1001	4.9834	0.6905
1.500	2.063	1.7895	1.4687	3.6481	0.6501
1.550	2.131	1.7168	1.3131	3.4450	0.5452
1.600	2.200	1.5173	1.3817	3.3992	0.3929
1.650	2.269	1.8356	2.3271	4.5485	0.3902
1.700	2.338	1.4210	1.7609	3.4312	0.3646
1.750	2.406	0.8291	0.8303	1.9052	0.1378
1.800	2.475	0.3386	0.6946	1.0549	0.0000
1.850	2.544	0.1757	0.3699	0.5516	0.0000

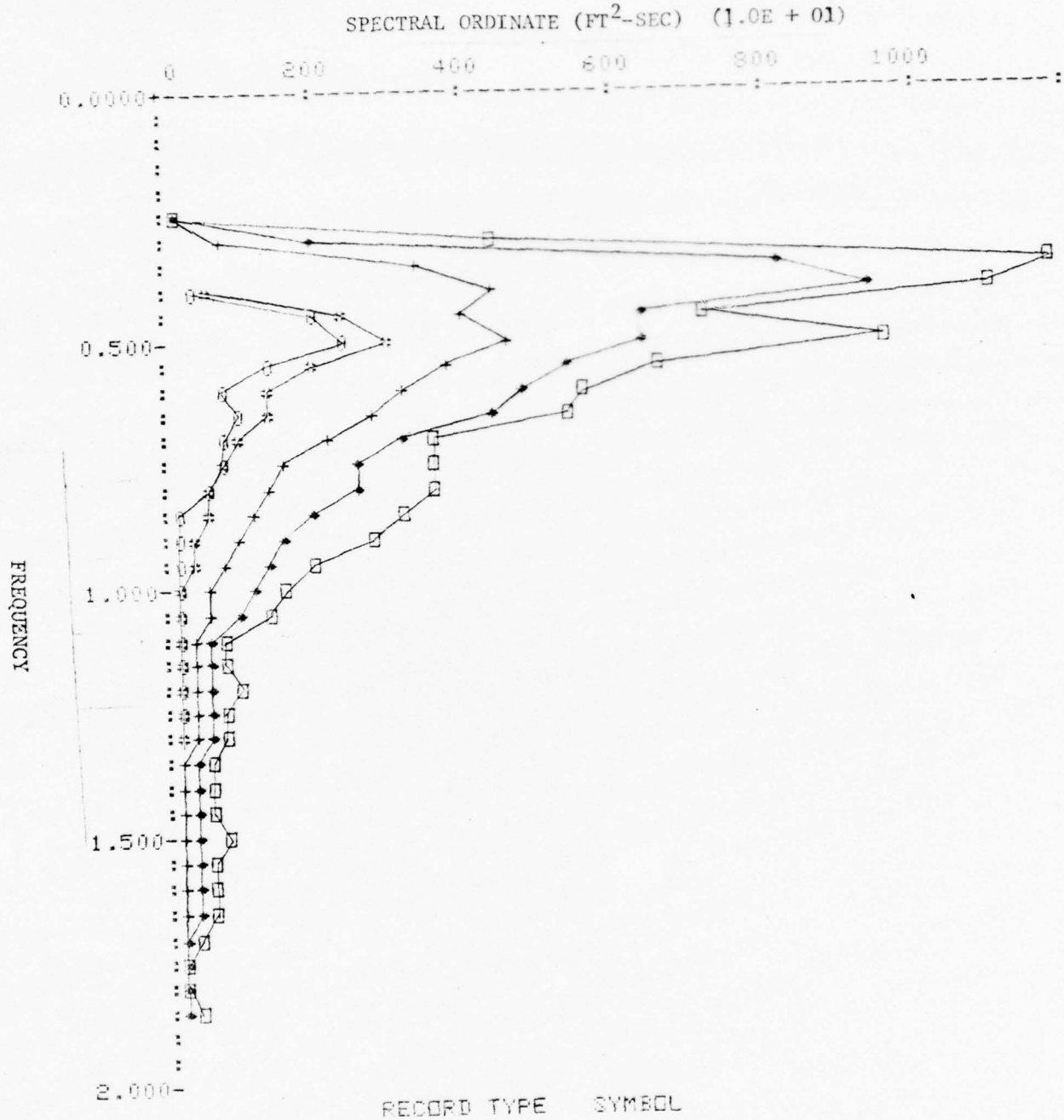
H(1/3)	13.6428	MOM-M(-1)	18.4875
PERIOD-T1	8.6396	AREA-M0	11.6329
PERIOD-T-1	9.9855	1ST MOM-M1	8.4601
PERIOD-T2	7.9363	2ND MOM-M2	7.2914
PERIOD-T4	5.7208	3RD MOM-M3	7.4527
HC(1/3)	11.8920	4TH MOM-M4	8.7954
B	0.3785		
E	0.6931		
D	0.8717		
MAX. FREQ.	0.5000		
H1/3/LAMBDA	0.0169		
STD. DEV.M0	8.5470		


SPECTRAL ORDINATE (FT2-SEC) (1.0E + 01)
0
100
200
300
400
500
0.0000
0.500
1.000
1.500
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
HIGHEST-1/3
LOWEST-1/3
HIGHEST
LOWEST

RECORD NUMBERS , GROUP NO. 6:
11 12 14 32 43 54 62 63 67 68 73 92 93

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.309	0.1514	0.1463	0.3313	0.0102
0.250	0.386	0.7352	0.4988	1.3183	0.2242
0.300	0.463	7.1751	12.0366	20.0950	0.5425
0.350	0.540	33.8383	38.0235	82.6749	0.9149
0.400	0.617	44.2594	38.8028	93.8836	6.9580
0.450	0.694	40.4353	18.2247	64.4787	23.1390
0.500	0.772	45.9926	17.4102	64.1409	30.6659
0.550	0.849	38.0654	15.1708	54.2355	20.1763
0.600	0.926	32.9621	14.0783	48.4968	14.7979
0.650	1.003	28.3585	12.4815	43.4165	13.6098
0.700	1.080	21.1511	8.7547	31.5324	10.9632
0.750	1.157	15.3424	8.5338	26.0108	8.8368
0.800	1.235	14.2952	8.6316	25.1153	6.9429
0.850	1.312	12.4412	6.9266	20.1550	5.7619
0.900	1.389	9.5219	6.4993	16.5292	4.2482
0.950	1.466	7.7098	5.2856	13.9860	3.3223
1.000	1.543	6.9900	4.2337	12.3577	2.5252
1.050	1.620	6.1449	3.4857	10.4248	2.9027
1.100	1.698	4.3079	2.0273	6.8811	2.1619
1.150	1.775	4.0975	1.9607	6.5218	2.2026
1.200	1.852	3.8781	2.1385	6.2196	1.9547
1.250	1.929	3.8833	1.7340	6.0603	2.0290
1.300	2.006	3.3730	2.1154	5.9037	1.4924
1.350	2.083	2.5234	1.3975	4.1764	0.9488
1.400	2.161	1.8941	1.5312	3.6885	0.6262
1.450	2.238	1.9055	1.5367	3.6298	0.3202
1.500	2.315	2.1349	1.7163	4.0965	0.6633
1.550	2.392	1.8905	1.3292	3.4057	0.6617
1.600	2.469	1.8258	1.5203	3.6543	0.4720
1.650	2.546	1.7472	1.3907	3.4033	0.3076
1.700	2.624	1.5261	1.0308	2.7868	0.3256
1.750	2.701	1.0325	0.5021	1.6388	0.5016
1.800	2.778	0.5037	0.7629	1.4028	0.0000
1.850	2.855	0.5581	1.0536	1.8140	0.0000

H(1/3)	17.9546	MOM-M(-1)	36.3814
PERIOD-T1	9.6969	AREA-M0	20.1479
PERIOD-T-1	11.3456	1ST MOM-M1	13.0550
PERIOD-T2	8.8242	2ND MOM-M2	10.2150
PERIOD-T4	6.0589	3RD MOM-M3	9.7249
HC(1/3)	15.4004	4TH MOM-M4	10.9855
B	0.2979		
E	0.7270		
D	0.8577		
MAX. FREQ.	0.5000		
H1/3/LAMBDA	0.0222		
STD. DEV.M0	13.8441		



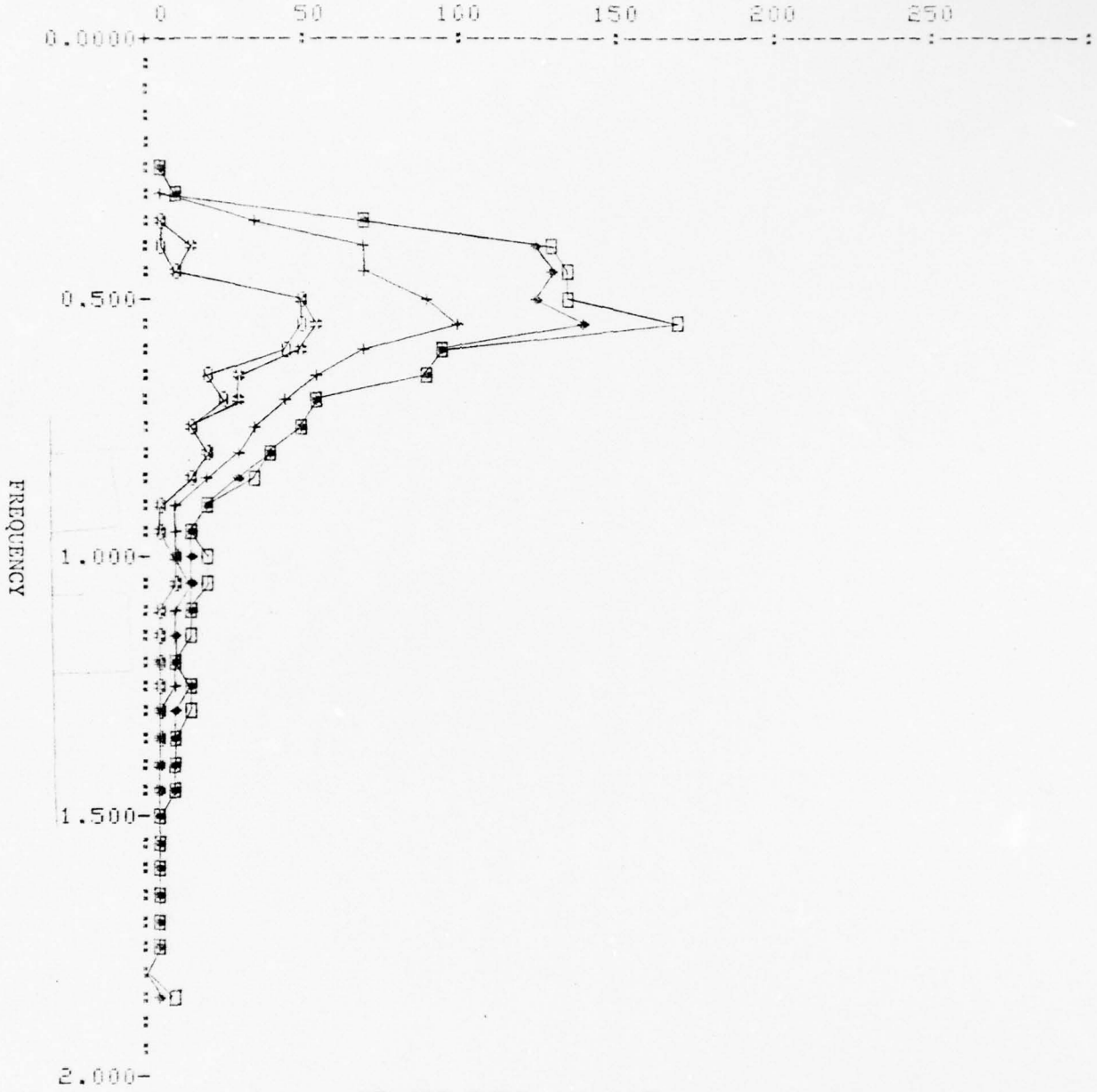
RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	◆
LOWEST-1/3	#
HIGHEST	□
LOWEST	0

RECORD NUMBERS , GROUP NO. 7:
16 42 55 64 65 66

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.298	0.4874	0.5070	1.1049	0.0000
0.250	0.372	1.7613	1.0613	3.0193	0.6674
0.300	0.446	4.4821	2.6521	7.9443	2.1151
0.350	0.521	34.0634	27.3433	68.7514	4.8566
0.400	0.595	69.1504	49.0599	123.2019	13.6453
0.450	0.670	69.2648	47.4089	127.8470	12.1518
0.500	0.744	90.9926	30.7229	124.8531	52.0620
0.550	0.819	98.0915	40.1160	142.1947	54.8251
0.600	0.893	68.8633	20.7523	94.1939	47.7156
0.650	0.967	55.5411	25.3769	88.1478	30.2190
0.700	1.042	42.5075	10.3988	53.2676	30.8529
0.750	1.116	34.6162	13.2442	48.0315	16.6242
0.800	1.191	28.8823	9.0830	40.0964	17.9818
0.850	1.265	21.5519	7.0631	30.8686	15.0559
0.900	1.339	12.4565	5.4156	19.6020	7.1165
0.950	1.414	10.7091	3.9444	15.4580	6.2430
1.000	1.488	12.1231	3.3230	15.4617	10.3769
1.050	1.563	13.1211	3.6014	17.0645	8.8457
1.100	1.637	10.6643	3.3535	13.8687	7.1176
1.150	1.712	8.1002	3.6166	11.9150	3.6425
1.200	1.786	7.4841	2.9590	11.3946	4.5332
1.250	1.860	8.3357	3.8077	12.9059	4.2049
1.300	1.935	6.8584	3.2362	10.8166	4.6119
1.350	2.009	5.7621	1.8756	8.2995	4.0451
1.400	2.084	5.9067	2.6742	9.0981	2.7216
1.450	2.158	5.8702	2.2727	8.2435	2.9385
1.500	2.232	3.3433	1.1734	4.3174	2.0667
1.550	2.307	2.8912	1.0771	4.1317	1.6372
1.600	2.381	3.1445	3.0306	6.6876	0.0000
1.650	2.456	2.7977	2.7059	5.8485	0.0000
1.700	2.530	1.5977	1.4331	3.1425	0.0091
1.750	2.605	1.1110	1.4319	2.8244	0.0000
1.800	2.679	1.2073	0.9270	2.2303	0.0000
1.850	2.753	2.7120	2.9536	6.5912	0.0000

H(1/3)	24.4662	MOM-M(-1)	64.3431
PERIOD-T1	9.3513	AREA-M0	37.4122
PERIOD-T-1	10.8061	1ST MOM-M1	25.1375
PERIOD-T2	8.5546	2ND MOM-M2	20.1824
PERIOD-T4	5.9385	3RD MOM-M3	19.6110
HC(1/3)	21.0601	4TH MOM-M4	22.5931
B	0.2163		
E	0.7198		
D	0.8608		
MAX. FREQ.	0.5500		
H1/3/LAMBDA	0.0366		
STD. DEV.M0	33.6293		

SPECTRAL ORDINATE (FT^2-SEC)



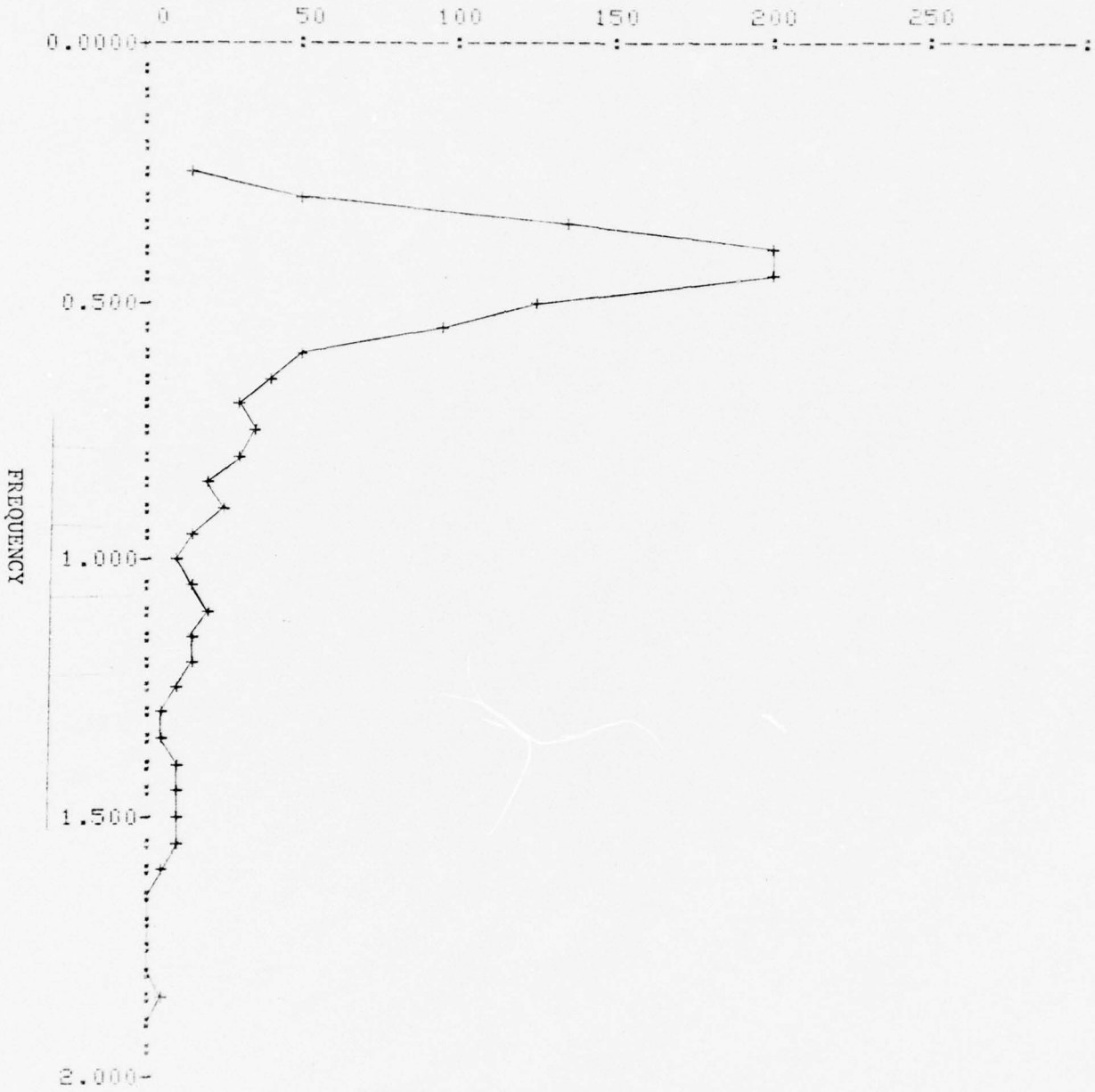
RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	*
LOWEST-1/3	#
HIGHEST	□
LOWEST	0

RECORD NUMBERS , GROUP NO. 8:
13 21

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.330	0.3444	0.1507	0.4951	0.1937
0.250	0.412	13.6798	9.7757	23.4555	3.9040
0.300	0.495	48.3474	34.7182	83.0657	13.6292
0.350	0.577	136.6895	55.1545	191.8440	81.5351
0.400	0.660	201.6736	4.1430	205.8166	197.5306
0.450	0.742	200.2447	29.9714	230.2161	170.2733
0.500	0.825	127.1307	2.1377	129.2684	124.9930
0.550	0.907	93.6772	26.6507	120.3280	67.0265
0.600	0.990	51.8075	10.4861	62.2936	41.3213
0.650	1.072	38.1788	17.6952	55.8740	20.4836
0.700	1.155	31.0957	14.2341	45.3298	16.8616
0.750	1.237	34.2532	4.6839	38.9371	29.5694
0.800	1.320	27.5226	5.3448	32.8674	22.1778
0.850	1.402	21.5551	2.6452	24.2004	18.9099
0.900	1.485	23.4576	6.5950	30.0527	16.8626
0.950	1.567	15.8449	6.3674	22.2123	9.4776
1.000	1.649	11.3004	3.7937	15.0941	7.5067
1.050	1.732	16.1958	10.1595	26.3553	6.0364
1.100	1.814	18.1107	15.1840	33.2947	2.9267
1.150	1.897	14.9586	11.9742	26.9328	2.9734
1.200	1.979	14.7556	10.5674	25.3230	4.1882
1.250	2.062	10.1923	6.3431	16.5354	3.8492
1.300	2.144	5.0778	3.2039	8.2817	1.8740
1.350	2.227	7.4227	5.1311	12.5539	2.2916
1.400	2.309	9.1520	4.2027	13.3547	4.9492
1.450	2.392	10.7655	6.5277	17.2932	4.2377
1.500	2.474	11.6180	7.4470	19.0649	4.1710
1.550	2.557	8.2015	4.2157	12.4172	3.9859
1.600	2.639	3.6565	0.8471	4.5036	2.8094
1.650	2.722	1.1281	1.1281	2.2561	0.0000
1.700	2.804	2.1512	0.9790	3.1301	1.1722
1.750	2.887	1.5532	1.3832	2.9364	0.1701
1.800	2.969	0.7223	0.7223	1.4445	0.0000
1.850	3.052	5.6263	5.6263	11.2525	0.0000

H(1/3)	31.3129	MOM-M(-1)	122.3628
PERIOD-T1	10.3641	AREA-M0	61.2811
PERIOD-T-1	12.5459	1ST MOM-M1	37.1515
PERIOD-T2	9.1312	2ND MOM-M2	29.0154
PERIOD-T4	5.6338	3RD MOM-M3	29.3174
HC(1/3)	26.0168	4TH MOM-M4	36.0898
B	0.1876		
E	0.7870		
D	0.8309		
MAX. FREQ.	0.4000		
H1/3/LAMBDA	0.0248		
STD. DEV.M0	74.3873		

SPECTRAL ORDINATE (FT^2-SEC)



RECORD TYPE	SYMBOL
AVERAGE	+

Groups Based on

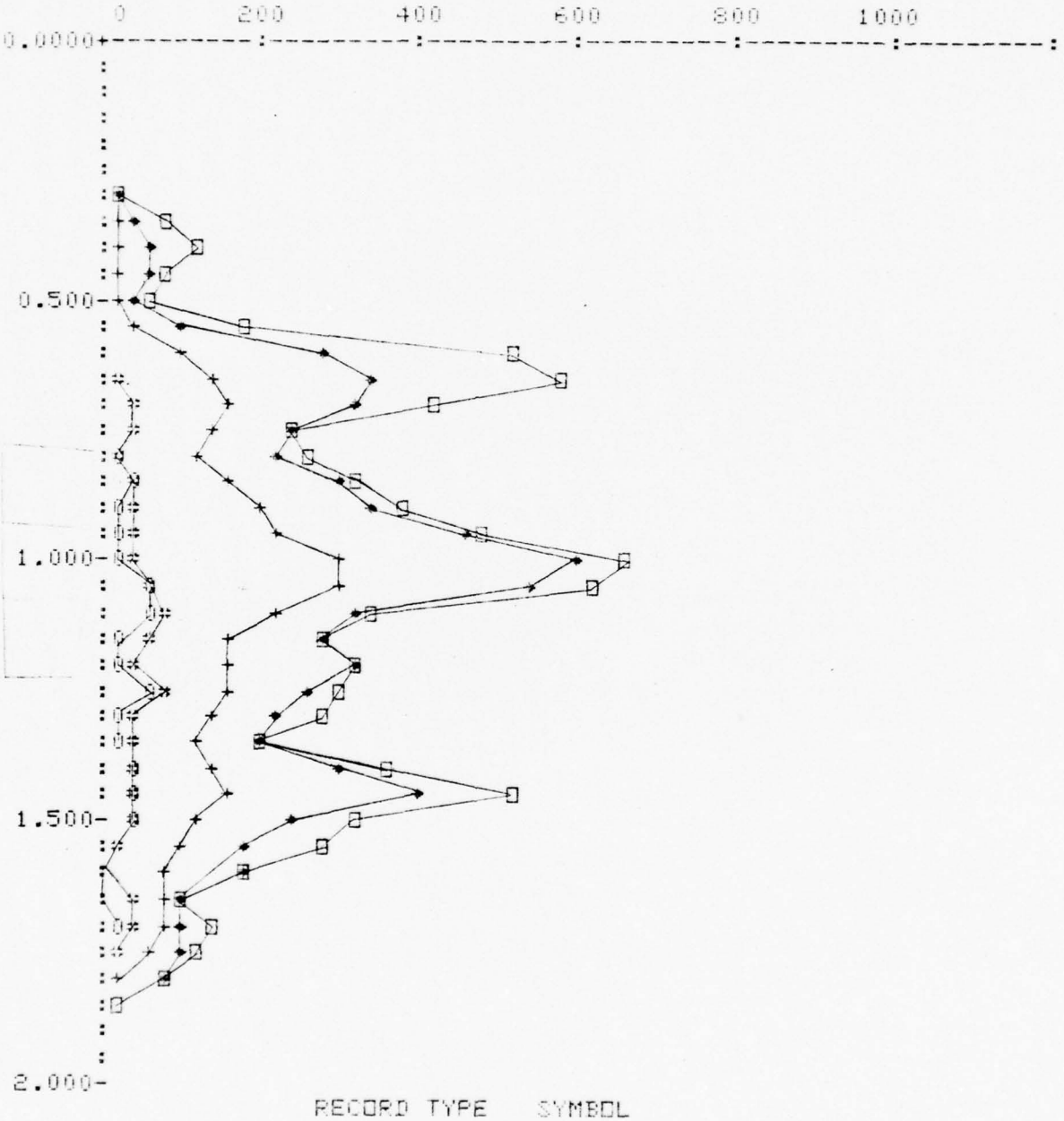
Period Sorting

RECORD NUMBERS - GROUP NO. 1:
2 9 47 49 74 84 85

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.182	0.0009	0.0023	0.0032	0.0000
0.250	0.228	0.0094	0.0209	0.0328	0.0000
0.300	0.273	0.0464	0.1004	0.1550	0.0000
0.350	0.319	0.1439	0.2906	0.4876	0.0000
0.400	0.365	0.2117	0.4033	0.6695	0.0000
0.450	0.410	0.1888	0.2912	0.5210	0.0129
0.500	0.456	0.1796	0.1983	0.4537	0.0280
0.550	0.501	0.3630	0.5956	1.0796	0.0479
0.600	0.547	0.9406	1.7394	2.8476	0.0926
0.650	0.592	1.3707	1.8324	3.4848	0.2228
0.700	0.638	1.6129	1.2283	3.1597	0.3471
0.750	0.684	1.3336	0.8401	2.3514	0.3757
0.800	0.729	1.2346	0.8314	2.2421	0.2874
0.850	0.775	1.5255	1.1367	3.0607	0.3687
0.900	0.820	1.9498	1.3039	3.4347	0.4322
0.950	0.866	2.2195	1.7307	4.5429	0.4230
1.000	0.911	3.0618	2.3278	5.9820	0.3563
1.050	0.957	2.9339	1.9391	5.4331	0.6173
1.100	1.003	2.1163	0.9729	3.1877	0.7330
1.150	1.048	1.8403	0.9831	2.7744	0.5979
1.200	1.094	1.5900	1.0904	3.1339	0.4774
1.250	1.139	1.5575	0.8281	2.6296	0.7395
1.300	1.185	1.3499	0.7606	2.2868	0.4887
1.350	1.230	1.2088	0.6879	1.9257	0.3832
1.400	1.276	1.3964	1.1728	3.0402	0.4451
1.450	1.322	1.6367	1.6455	3.9665	0.4968
1.500	1.367	1.1968	0.9311	2.4116	0.4639
1.550	1.413	0.9049	0.8047	1.8428	0.2702
1.600	1.458	0.8479	0.6766	1.7233	0.0000
1.650	1.504	0.7552	0.3236	1.0366	0.3391
1.700	1.549	0.7256	0.2968	1.0834	0.3999
1.750	1.595	0.5583	0.3796	1.0441	0.1647
1.800	1.641	0.2500	0.3144	0.7239	0.0000
1.850	1.686	0.0168	0.0411	0.0587	0.0000

H(1/3)	5.4456	MOM-M(-1)	1.8636
PERIOD-T1	5.7268	AREA-M0	1.8534
PERIOD-T-1	6.3178	1ST MOM-M1	2.0335
PERIOD-T2	5.5007	2ND MOM-M2	2.4182
PERIOD-T4	4.8136	3RD MOM-M3	3.0724
HC(1/3)	5.1168	4TH MOM-M4	4.1201
B	0.8170		
E	0.4839		
D	0.9396		
MAX. FREQ.	1.0000		
H1/3/LAMBDA	0.0269		
STD. DEV.M0	0.9028		

SPECTRAL ORDINATE (FT^2-SEC) (1.0E + 02)

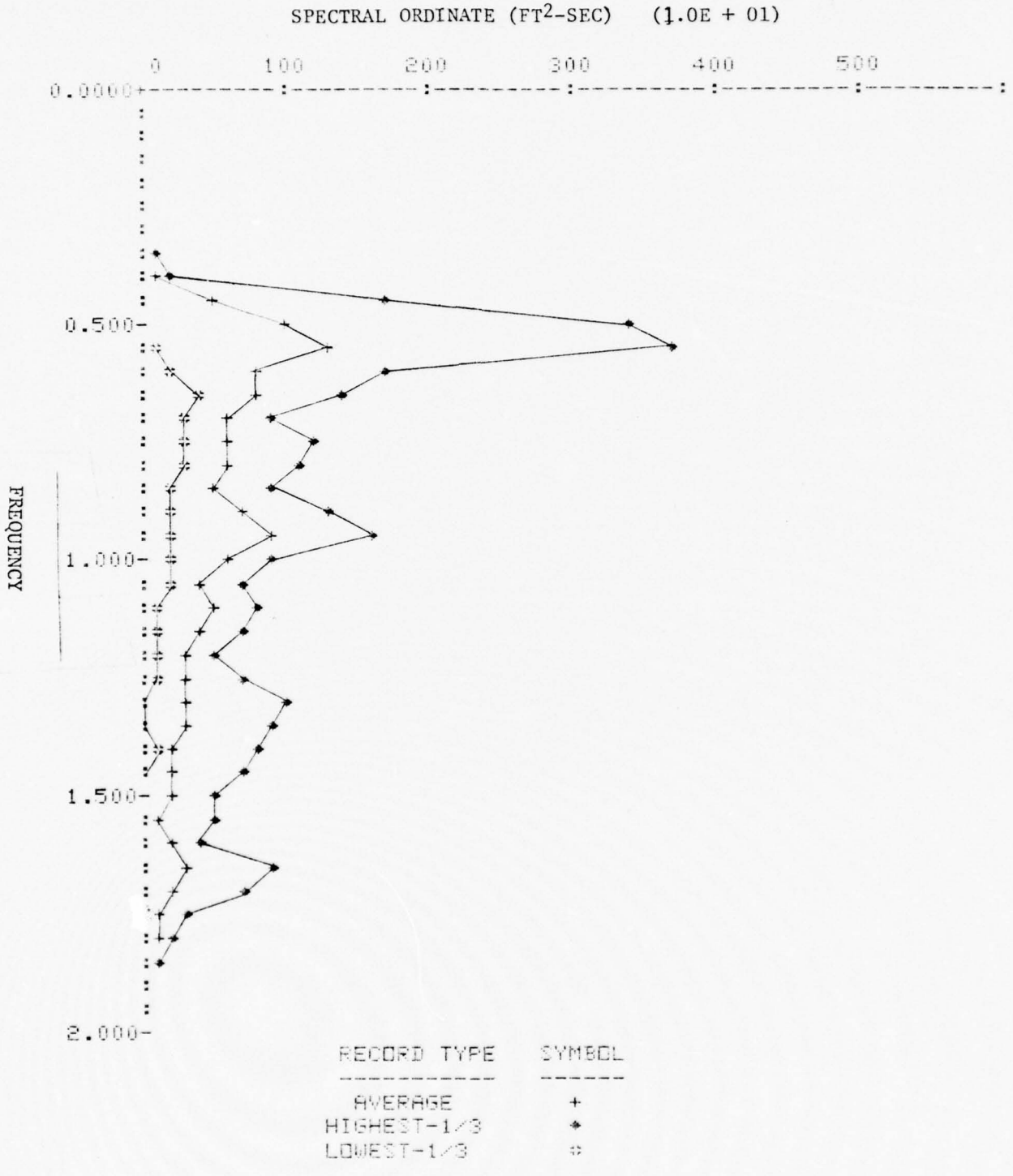


RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	*
LOWEST-1/3	#
HIGHEST	□
LOWEST	0

RECORD NUMBERS , GROUP NO. 2:
6 10 58 76

M	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.220	0.0000	0.0000	0.0000	0.0000
0.250	0.275	0.0414	0.0594	0.1432	0.0000
0.300	0.330	0.0998	0.1548	0.3670	0.0000
0.350	0.386	0.2734	0.2645	0.6512	0.0286
0.400	0.441	0.7247	0.6927	1.7976	0.0248
0.450	0.496	4.6894	6.8516	16.5010	0.0807
0.500	0.551	10.2480	14.0929	34.3733	0.2960
0.550	0.606	12.5423	14.9693	37.4797	0.7115
0.600	0.661	8.3097	6.0796	17.1468	1.7620
0.650	0.716	7.7171	3.8823	13.6787	3.8470
0.700	0.771	6.1088	2.4918	9.1417	2.8223
0.750	0.826	6.0773	3.5345	11.7487	2.9407
0.800	0.881	6.0156	3.4230	11.4656	2.8287
0.850	0.936	4.5582	2.8852	9.3032	1.7158
0.900	0.991	6.6615	4.2466	12.8251	2.1076
0.950	1.047	8.5059	5.1852	15.9531	2.3056
1.000	1.102	5.8954	2.4842	8.6358	2.0548
1.050	1.157	4.4110	1.8057	6.6736	1.6741
1.100	1.212	4.7956	2.8022	8.0933	0.9052
1.150	1.267	3.6694	2.8367	7.4023	0.6394
1.200	1.322	2.8043	1.6986	5.3001	1.1948
1.250	1.377	3.4617	2.5466	7.3194	1.1270
1.300	1.432	3.1638	3.9280	9.8984	0.3175
1.350	1.487	2.5906	3.4366	8.5293	0.2336
1.400	1.542	2.4703	2.9601	7.5917	0.5931
1.450	1.597	2.4159	2.8038	7.2484	0.3821
1.500	1.652	1.7577	2.1487	5.4573	0.2777
1.550	1.707	1.4426	1.8027	4.5402	0.1733
1.600	1.763	1.7252	1.4668	4.2302	0.4532
1.650	1.818	2.6484	3.3906	8.5034	0.4661
1.700	1.873	2.2125	2.6874	6.7898	0.2583
1.750	1.928	1.4012	1.0953	2.8664	0.2788
1.800	1.983	0.7214	0.8146	2.0979	0.0000
1.850	2.038	0.2018	0.2164	0.5554	0.0000

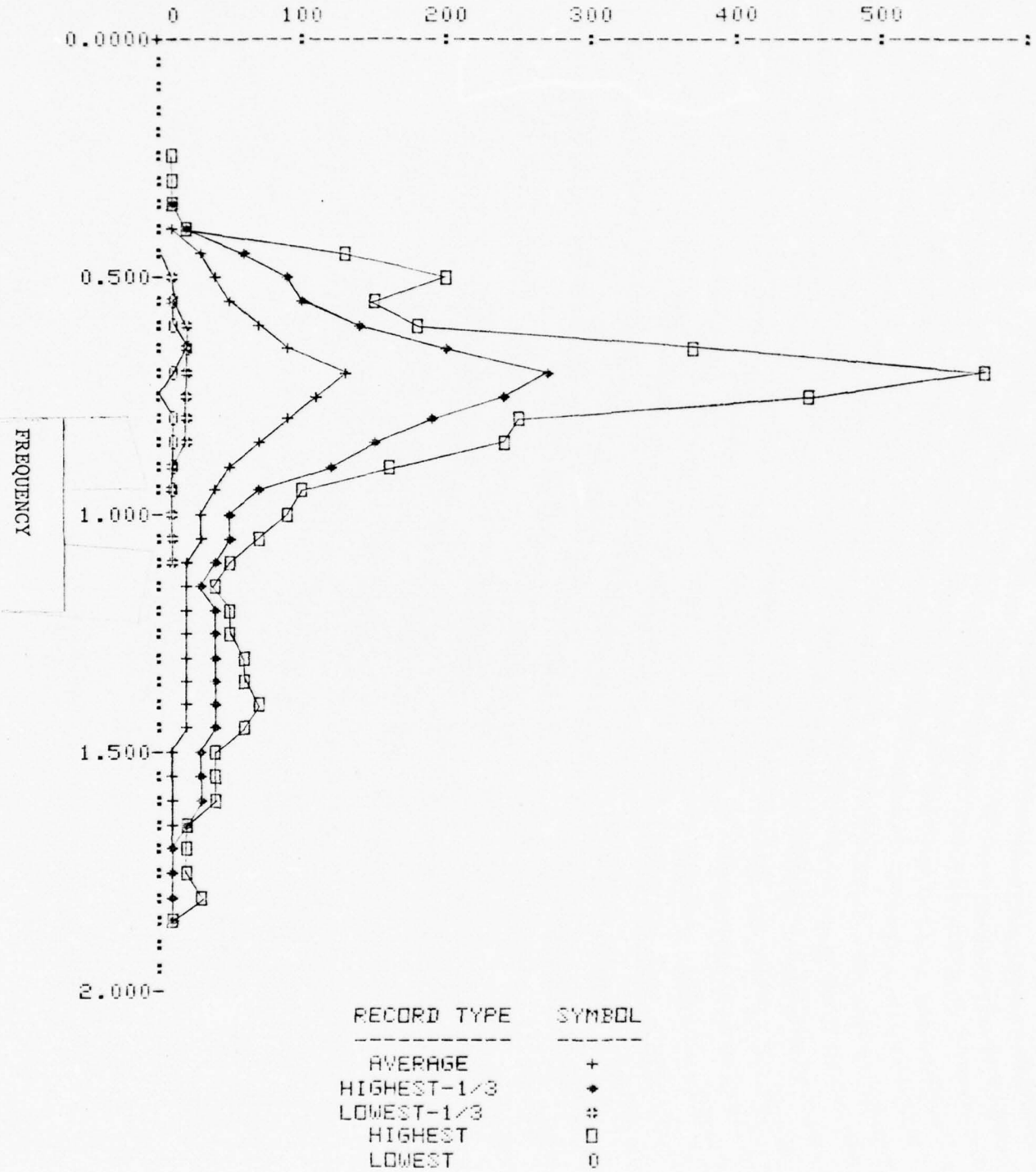
H(1/3)	10.2114	MOM-M(-1)	8.8888
PERIOD-T1	6.9215	AREA-M0	6.5171
PERIOD-T-1	8.0299	1ST MOM-M1	5.9161
PERIOD-T2	6.4424	2ND MOM-M2	6.1990
PERIOD-T4	5.0670	3RD MOM-M3	7.3352
HC(1/3)	9.1863	4TH MOM-M4	9.5319
B	0.4753		
E	0.6176		
D	0.8996		
MAX. FREQ.	0.5500		
H1/3/LAMBDA	0.0153		
STD. DEV.M0	4.8391		


SPECTRAL ORDINATE (FT2-SEC) (1.0E + 01)
0
100
200
300
400
500
0.0000
0.500
1.000
1.500
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
+
HIGHEST-1/3
*
LOWEST-1/3
◇

RECORD NUMBERS , GROUP NO. 3:
15 23 29 38 48 82 83 87

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.230	0.0167	0.0376	0.0445	0.0000
0.250	0.288	0.1110	0.2142	0.2752	0.0043
0.300	0.346	0.1584	0.2407	0.3703	0.0100
0.350	0.403	0.2676	0.2951	0.5669	0.0653
0.400	0.461	0.7621	0.7269	1.6433	0.2013
0.450	0.519	2.6466	3.9523	5.6704	0.4532
0.500	0.576	3.9059	6.0220	8.5899	0.7230
0.550	0.634	5.0715	4.6904	10.2368	1.1191
0.600	0.691	7.3054	5.7865	13.5502	1.7915
0.650	0.749	9.4793	11.1345	19.5306	2.0986
0.700	0.807	12.5957	17.3695	27.0126	2.2744
0.750	0.864	11.1966	13.7953	23.8468	2.1004
0.800	0.922	9.1257	9.1516	19.1213	1.9483
0.850	0.980	7.3960	7.7518	15.3292	1.6810
0.900	1.037	5.4703	5.5607	11.5259	1.3196
0.950	1.095	3.8782	3.0886	6.9136	1.3347
1.000	1.152	3.0810	2.5135	5.4752	0.9953
1.050	1.210	2.6342	2.1432	4.9478	0.7788
1.100	1.268	2.2841	1.5113	3.9568	0.7750
1.150	1.325	1.7569	1.2937	3.2827	0.4808
1.200	1.383	2.0972	1.3716	4.4501	0.4453
1.250	1.441	2.1186	2.0012	4.4842	0.3487
1.300	1.498	1.7810	2.0506	3.9521	0.3039
1.350	1.556	1.8568	2.1631	4.0088	0.3950
1.400	1.613	1.9791	2.3777	4.4623	0.3455
1.450	1.671	1.6988	2.0854	3.8947	0.1755
1.500	1.729	1.3879	1.4380	3.0752	0.1704
1.550	1.786	1.4099	1.4270	3.0878	0.0843
1.600	1.844	1.4362	1.4557	2.9737	0.0434
1.650	1.902	0.9190	0.8984	2.0236	0.1094
1.700	1.959	0.6699	0.7540	1.4929	0.0556
1.750	2.017	0.6258	0.7312	1.4018	0.0750
1.800	2.074	0.4649	0.8094	1.0800	0.0205
1.850	2.132	0.2364	0.4481	0.6239	0.0000

H(1/3)	9.2871	MOM-M(-1)	6.9501
PERIOD-T1	7.2411	AREA-M0	5.3907
PERIOD-T-1	8.1008	1ST MOM-M1	4.6775
PERIOD-T2	6.8178	2ND MOM-M2	4.5784
PERIOD-T4	5.4081	3RD MOM-M3	5.0471
HC(1/3)	8.3822	4TH MOM-M4	6.1798
B	0.5152		
E	0.6089		
D	0.9026		
MAX. FREQ.	0.7000		
H1/3/LAMBDA	0.0225		
STD. DEV.M0	7.1976		

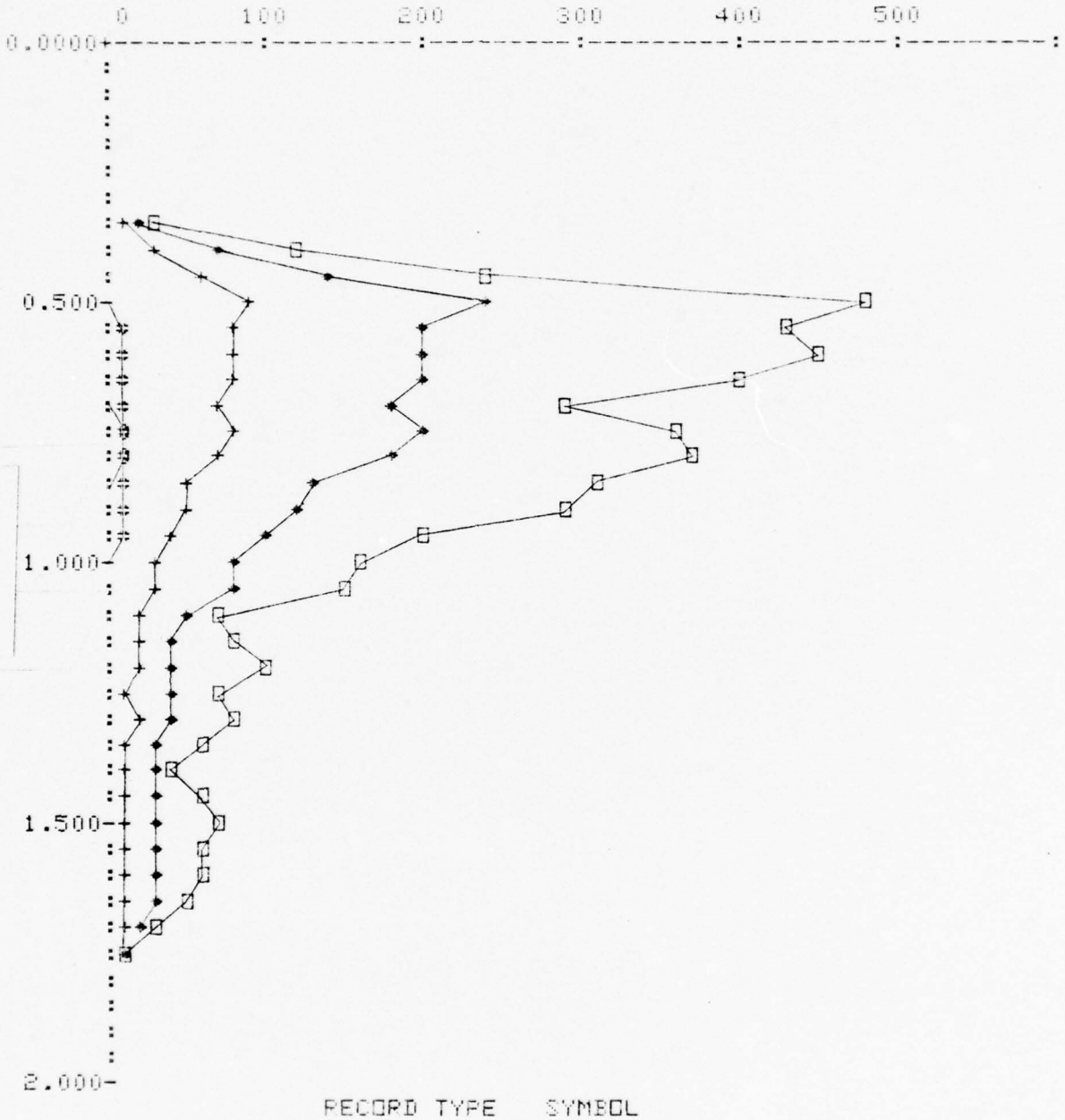

SPECTRAL ORDINATE (FT^2-SEC) (1.0E + 01)
0
100
200
300
400
500
0.0000
0.500
1.000
1.500
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
HIGHEST-1/3
LOWEST-1/3
HIGHEST
LOWEST

RECORD NUMBERS , GROUP NO. 4:
1 5 22 36 40 79 80 81 92

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.248	0.0110	0.0279	0.0330	0.0000
0.250	0.310	0.0606	0.0879	0.1600	0.0054
0.300	0.373	0.0844	0.0952	0.1987	0.0154
0.350	0.435	0.6400	0.9260	1.5640	0.0940
0.400	0.497	2.7704	3.9843	7.1737	0.2569
0.450	0.559	5.9608	7.4675	14.2986	0.3724
0.500	0.621	8.8974	14.3741	23.5208	0.1751
0.550	0.683	7.9074	12.8309	20.4237	0.7653
0.600	0.745	8.2742	13.3845	20.1298	0.9928
0.650	0.807	7.9395	11.9344	19.6117	0.9282
0.700	0.869	7.0830	9.4425	17.9304	0.9698
0.750	0.931	7.6767	10.9001	19.5920	1.0749
0.800	0.993	6.8792	10.9459	17.7937	0.7334
0.850	1.055	5.3831	9.1941	13.1613	0.6749
0.900	1.118	4.8929	8.5545	12.4505	0.7230
0.950	1.180	4.0599	5.8419	9.9432	0.5002
1.000	1.242	3.3903	4.7765	8.1604	0.3150
1.050	1.304	3.1032	4.4596	7.7941	0.2411
1.100	1.366	1.9331	2.2585	4.5915	0.2293
1.150	1.428	1.6280	2.3888	3.9801	0.1823
1.200	1.490	1.6267	3.0324	4.2051	0.1008
1.250	1.552	1.4433	2.1254	3.5043	0.1363
1.300	1.614	1.5313	2.4662	3.8108	0.0872
1.350	1.676	1.2802	1.6716	3.1039	0.1414
1.400	1.738	1.1318	1.3167	2.7282	0.1148
1.450	1.800	1.1082	1.7652	2.9436	0.0836
1.500	1.863	1.2491	2.1425	3.2916	0.0499
1.550	1.925	1.0398	1.6939	2.6999	0.1152
1.600	1.987	1.1397	1.7468	2.9486	0.1044
1.650	2.049	1.0454	1.5135	2.5711	0.0897
1.700	2.111	0.6891	0.9794	1.7563	0.0933
1.750	2.173	0.2945	0.3400	0.7183	0.0312
1.800	2.235	0.1151	0.1719	0.3365	0.0000
1.850	2.297	0.0245	0.0497	0.0736	0.0000

H(1/3)	9.0468	MOM-M(-1)	7.2511
PERIOD-T1	7.8019	AREA-M0	5.1153
PERIOD-T-1	8.9067	1ST MOM-M1	4.1195
PERIOD-T2	7.2717	2ND MOM-M2	3.8190
PERIOD-T4	5.5939	3RD MOM-M3	4.0502
HC(1/3)	8.0708	4TH MOM-M4	4.8182
B	0.5427		
E	0.6389		
D	0.8921		
MAX. FREQ.	0.5000		
H1/3/LAMBDA	0.0112		
STD. DEV.M0	11.4024		

SPECTRAL ORDINATE (FT^2-SEC) (1.0E + 01)

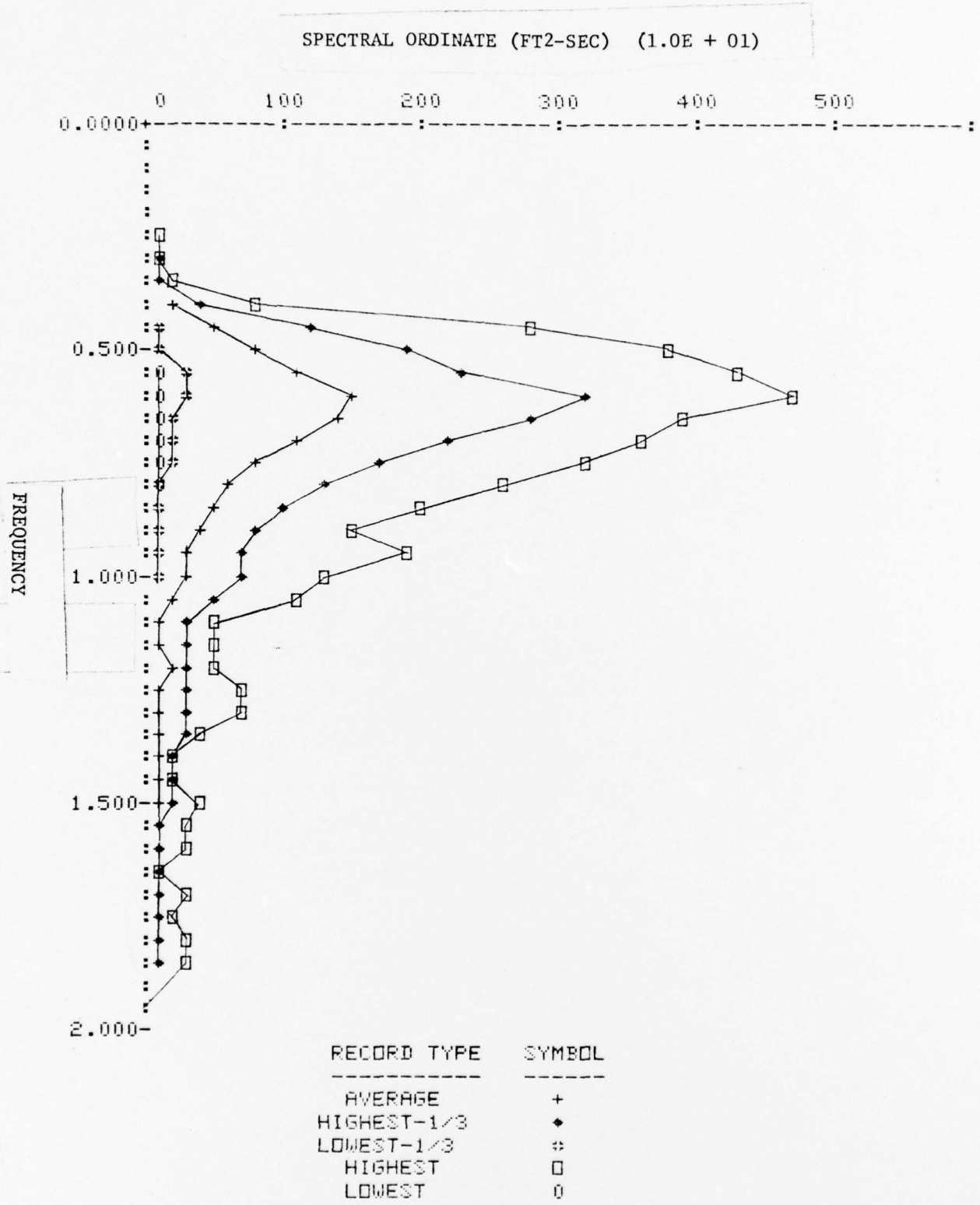


RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	◆
LOWEST-1/3	◇
HIGHEST	□
LOWEST	0

RECORD NUMBERS - GROUP NO. 5:
12 14 24 30 37 39 45 50 53 58 59 60 75 86

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.261	0.0288	0.0526	0.0788	0.0000
0.250	0.327	0.1683	0.2300	0.4069	0.0168
0.300	0.392	0.2998	0.3126	0.6383	0.0471
0.350	0.458	0.5053	0.4213	0.9582	0.1483
0.400	0.523	1.7841	2.2924	3.9551	0.4034
0.450	0.588	5.1044	8.0854	12.3494	0.6327
0.500	0.654	8.4469	12.0656	19.1131	1.4032
0.550	0.719	11.4706	11.8626	23.1360	2.5741
0.600	0.784	15.3874	14.5401	31.8242	3.1859
0.650	0.850	13.8083	12.1355	28.4062	2.4115
0.700	0.915	10.7648	10.3306	22.3759	1.6047
0.750	0.981	8.2016	8.3120	17.1995	1.5849
0.800	1.046	6.4368	6.5322	12.9778	1.4060
0.850	1.111	4.7748	5.3895	10.3873	1.0988
0.900	1.177	3.6850	4.1411	7.8970	0.9414
0.950	1.242	3.1823	4.6848	7.0757	0.6635
1.000	1.307	2.9239	3.9385	6.5993	0.5311
1.050	1.373	2.3537	2.9605	5.2426	0.4659
1.100	1.438	1.4966	1.4330	3.0466	0.3972
1.150	1.504	1.3107	1.3767	2.6847	0.3298
1.200	1.569	1.5704	1.8068	3.4627	0.2654
1.250	1.634	1.4640	1.7648	3.1747	0.1946
1.300	1.700	1.4545	1.8350	3.1755	0.1892
1.350	1.765	1.3169	1.8443	2.7762	0.2334
1.400	1.830	0.8452	0.7706	1.7347	0.1339
1.450	1.896	0.8290	0.7222	1.6813	0.1406
1.500	1.961	0.8173	0.8512	1.6083	0.1854
1.550	2.027	0.6984	0.7767	1.4122	0.1991
1.600	2.092	0.6340	0.8359	1.3076	0.1348
1.650	2.157	0.4032	0.3605	0.8056	0.1035
1.700	2.223	0.4776	0.7935	1.1358	0.0381
1.750	2.288	0.4420	0.6143	1.1205	0.0293
1.800	2.353	0.3294	0.7062	0.8355	0.0000
1.850	2.419	0.4721	1.0135	1.2856	0.0000

H(1/3)	9.5566	MOM-M(-1)	8.3599
PERIOD-T1	8.2150	AREA-M0	5.7081
PERIOD-T-1	9.2022	1ST MOM-M1	4.3658
PERIOD-T2	7.5726	2ND MOM-M2	3.8280
PERIOD-T4	5.7445	3RD MOM-M3	3.9992
HC(1/3)	8.4417	4TH MOM-M4	4.5796
B	0.5206		
E	0.6829		
D	0.9833		
MAX. FREQ.	0.6000		
H1/3/LAMBDA	0.0170		
STD. DEV.M0	11.5351		


SPECTRAL ORDINATE (FT2-SEC) (1.0E + 01)
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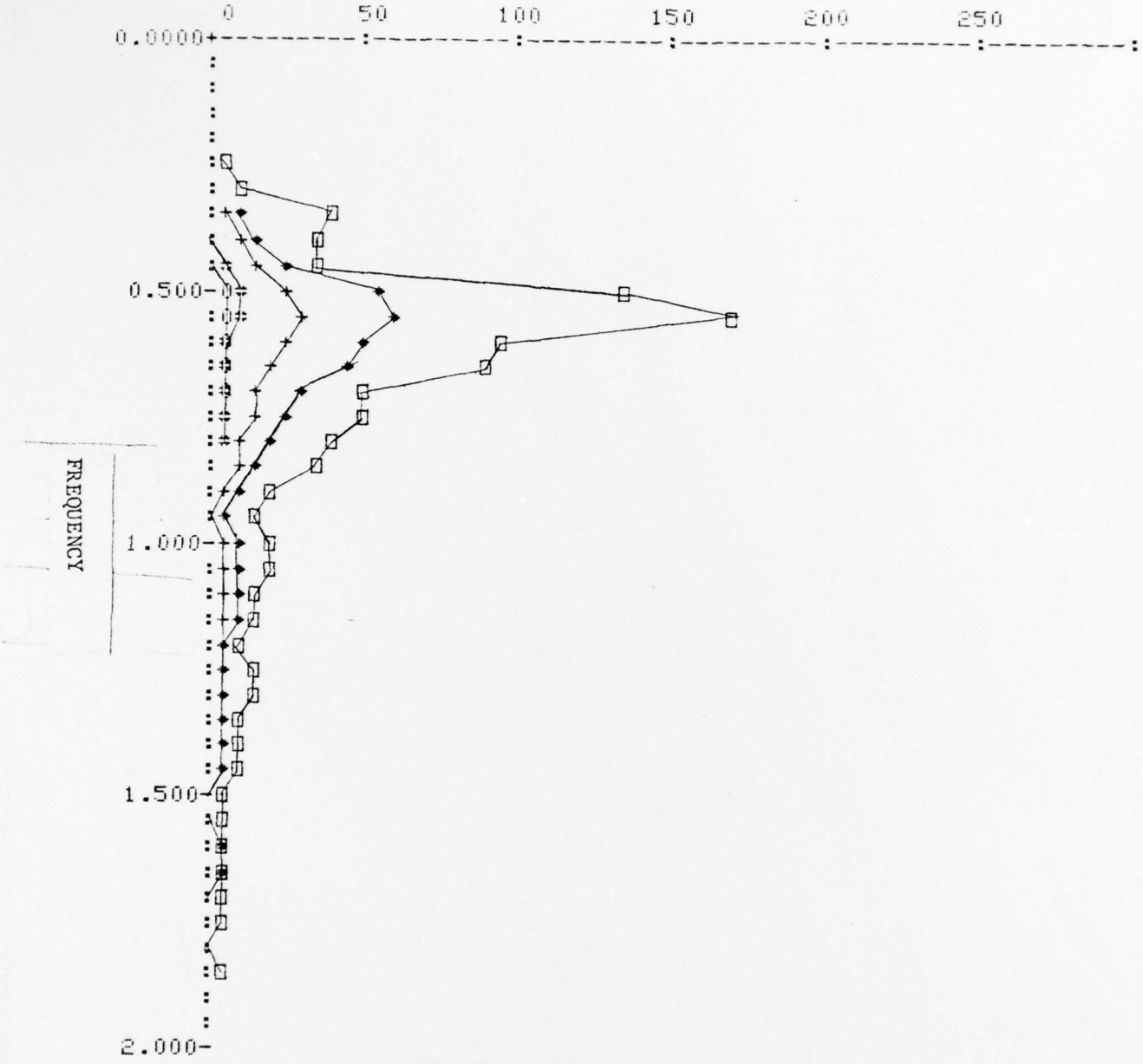
200
300
400
500
0.0000
0.500
1.000
1.500
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
HIGHEST-1/3
LOWEST-1/3
HIGHEST
LOWEST

RECORD NUMBERS , GROUP NO. 6:
3 4 7 8 19 28 32 44 46 56 57 64 66 70 71
88 91

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.277	0.0768	0.1660	0.2015	0.0000
0.250	0.347	0.3583	0.7173	0.8568	0.0244
0.300	0.416	0.9691	2.1425	2.3191	0.1548
0.350	0.485	4.2878	9.3933	10.7949	0.4130
0.400	0.555	7.7486	8.9450	16.9448	1.0547
0.450	0.624	13.4501	8.8977	23.8195	4.1315
0.500	0.694	27.3868	30.3033	54.1796	7.7173
0.550	0.763	29.9358	40.0580	61.1681	8.7957
0.600	0.832	23.8974	27.0807	49.3408	7.1624
0.650	0.902	21.2865	25.7864	45.3832	5.2759
0.700	0.971	15.1540	14.6989	31.3172	4.1355
0.750	1.040	12.9552	13.7773	26.7844	3.3833
0.800	1.110	10.5039	11.6293	21.5099	2.8662
0.850	1.179	8.0103	8.9925	16.4750	2.3483
0.900	1.248	4.6554	4.5282	8.6030	1.6079
0.950	1.318	3.1862	2.9132	5.6019	1.1822
1.000	1.387	3.7557	4.6805	7.7667	1.0369
1.050	1.456	4.1098	4.8743	8.8122	0.8886
1.100	1.526	4.0419	4.2655	8.6362	0.9933
1.150	1.595	3.4339	3.8225	7.6335	0.6785
1.200	1.665	2.8582	3.3397	6.1591	0.6880
1.250	1.734	2.7291	3.9092	6.1259	0.6202
1.300	1.803	2.1356	3.1019	4.5888	0.6525
1.350	1.873	1.8273	1.9941	3.7333	0.5100
1.400	1.942	1.7859	2.2243	3.7514	0.2951
1.450	2.011	1.6772	2.2716	3.7856	0.3154
1.500	2.081	0.9908	0.8123	1.7848	0.3601
1.550	2.150	1.1325	1.0145	2.2575	0.2906
1.600	2.219	1.4594	1.9014	3.3006	0.1871
1.650	2.289	1.5215	1.9182	3.5594	0.1656
1.700	2.358	1.1255	1.2085	2.4418	0.2411
1.750	2.427	0.6701	0.7214	1.4278	0.0845
1.800	2.497	0.2689	0.3239	0.6482	0.0093
1.850	2.566	0.3743	1.1997	1.0470	0.0000

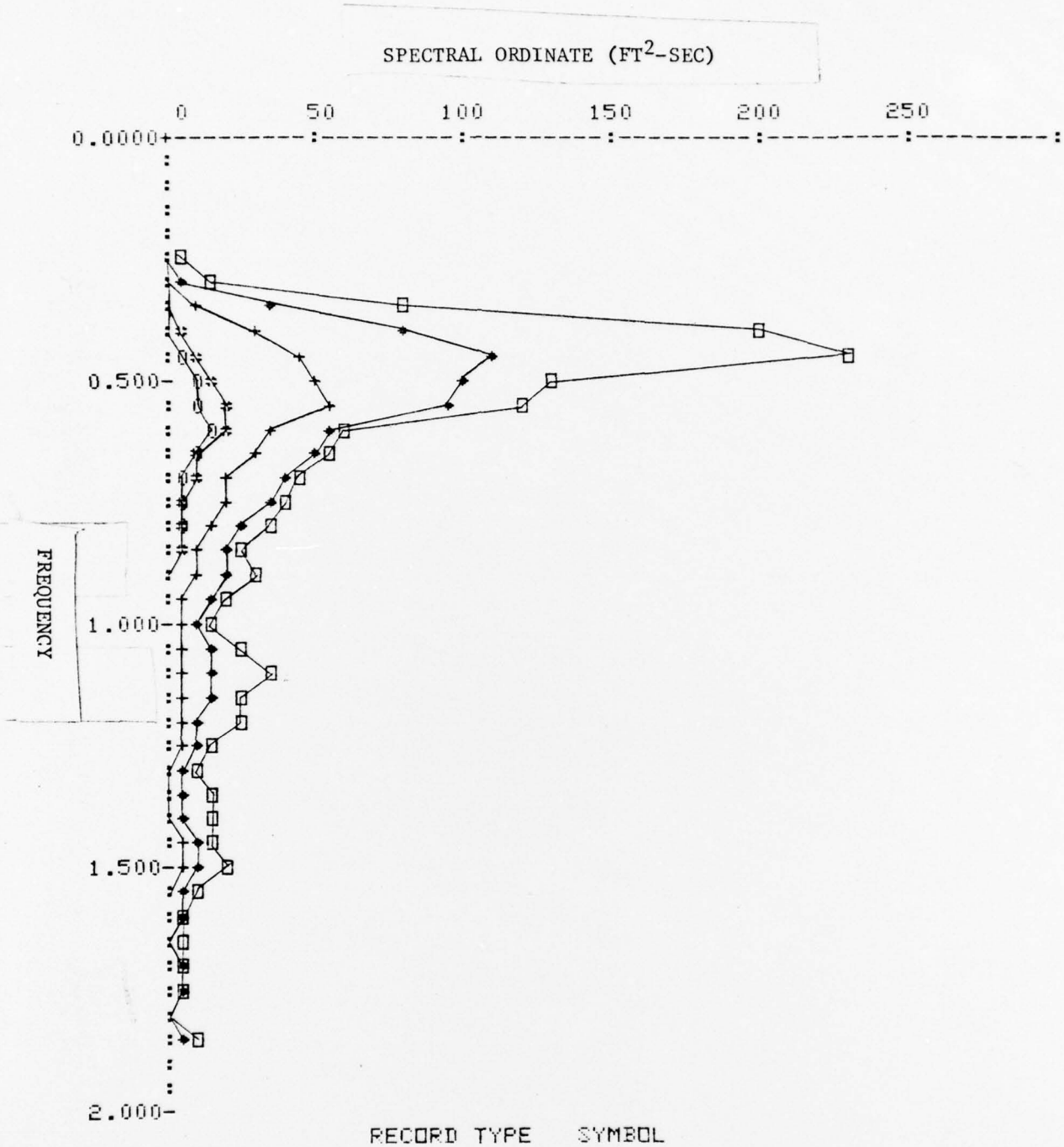
H(1/3)	13.2694	MOM-M(-1)	17.3762
PERIOD-T1	8.7156	AREA-M0	11.0048
PERIOD-T-1	9.9209	1ST MOM-M1	7.9335
PERIOD-T2	8.0611	2ND MOM-M2	6.6857
PERIOD-T4	5.8533	3RD MOM-M3	6.6559
HC(1/3)	11.5955	4TH MOM-M4	7.7039
B	0.3850		
E	0.6876		
D	0.8739		
MAX. FREQ.	0.5500		
H1/3/LAMBDA	0.0199		
STD. DEV.M0	16.1144		


SPECTRAL ORDINATE (FT2-SEC)
0
50
100
150
200
250
0.0000
0.500
1.000
1.500
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
HIGHEST-1/3
LOWEST-1/3
HIGHEST
LOWEST

RECORD NUMBERS • GROUP NO. 7:
13 18 31 33 41 65 67 78 93

W	W•T/2•PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.293	0.2110	0.3632	0.5662	0.0000
0.250	0.366	0.9098	1.2555	2.3017	0.0527
0.300	0.439	2.2196	4.1030	5.9302	0.1722
0.350	0.512	11.3147	25.0255	32.5359	0.3032
0.400	0.585	30.2380	59.6553	80.9800	2.5467
0.450	0.658	47.1300	66.8546	108.2305	7.5124
0.500	0.731	50.1850	40.2556	97.6586	15.7708
0.550	0.805	52.6606	35.5970	96.9191	19.8134
0.600	0.878	36.7681	16.4253	56.5845	19.5963
0.650	0.951	28.2528	16.9293	50.3748	11.7678
0.700	1.024	20.6215	13.0443	37.5238	8.8457
0.750	1.097	18.0168	12.3212	32.6597	6.9660
0.800	1.170	14.5979	10.0636	26.8167	4.9973
0.850	1.243	10.4552	6.8837	18.2709	3.4982
0.900	1.317	8.8948	8.3122	17.5878	1.9475
0.950	1.390	6.4202	6.0948	12.6895	1.7940
1.000	1.463	5.4182	4.3626	10.9440	2.0975
1.050	1.536	6.0417	7.6384	13.9880	1.6372
1.100	1.609	6.2786	9.8295	15.3098	1.0506
1.150	1.682	5.8705	7.9014	13.7178	0.9085
1.200	1.755	5.2394	7.2789	11.7789	0.9164
1.250	1.828	3.9955	4.6501	8.6025	0.9838
1.300	1.902	2.8995	2.2202	5.3008	0.8963
1.350	1.975	2.9032	3.5349	6.3248	0.8270
1.400	2.048	2.9455	3.8144	6.5799	0.5942
1.450	2.121	3.3814	5.0305	7.8350	0.4711
1.500	2.194	3.2869	5.6707	8.3592	0.5041
1.550	2.267	2.7186	3.5092	5.8957	0.7832
1.600	2.340	1.4036	1.2887	2.9787	0.4489
1.650	2.414	0.6543	0.8344	1.6253	0.0000
1.700	2.487	1.1760	1.0269	2.5274	0.2311
1.750	2.560	1.1343	1.3192	2.7771	0.1991
1.800	2.633	0.4959	0.7706	1.3225	0.0126
1.850	2.706	1.2716	3.5293	3.8147	0.0000

H(1/3)	17.8383	MOM-M(-1)	33.6563
PERIOD-T1	9.1910	AREA-M0	19.8878
PERIOD-T-1	10.6331	1ST MOM-M1	13.5957
PERIOD-T2	8.3909	2ND MOM-M2	11.1514
PERIOD-T4	5.7937	3RD MOM-M3	11.1079
HC(1/3)	15.3283	4TH MOM-M4	13.1152
B	0.2983		
E	0.7234		
D	0.8593		
MAX. FREQ.	0.5500		
H1/3/LAMBDA	0.0267		
STD. DEV.M0	32.0462		

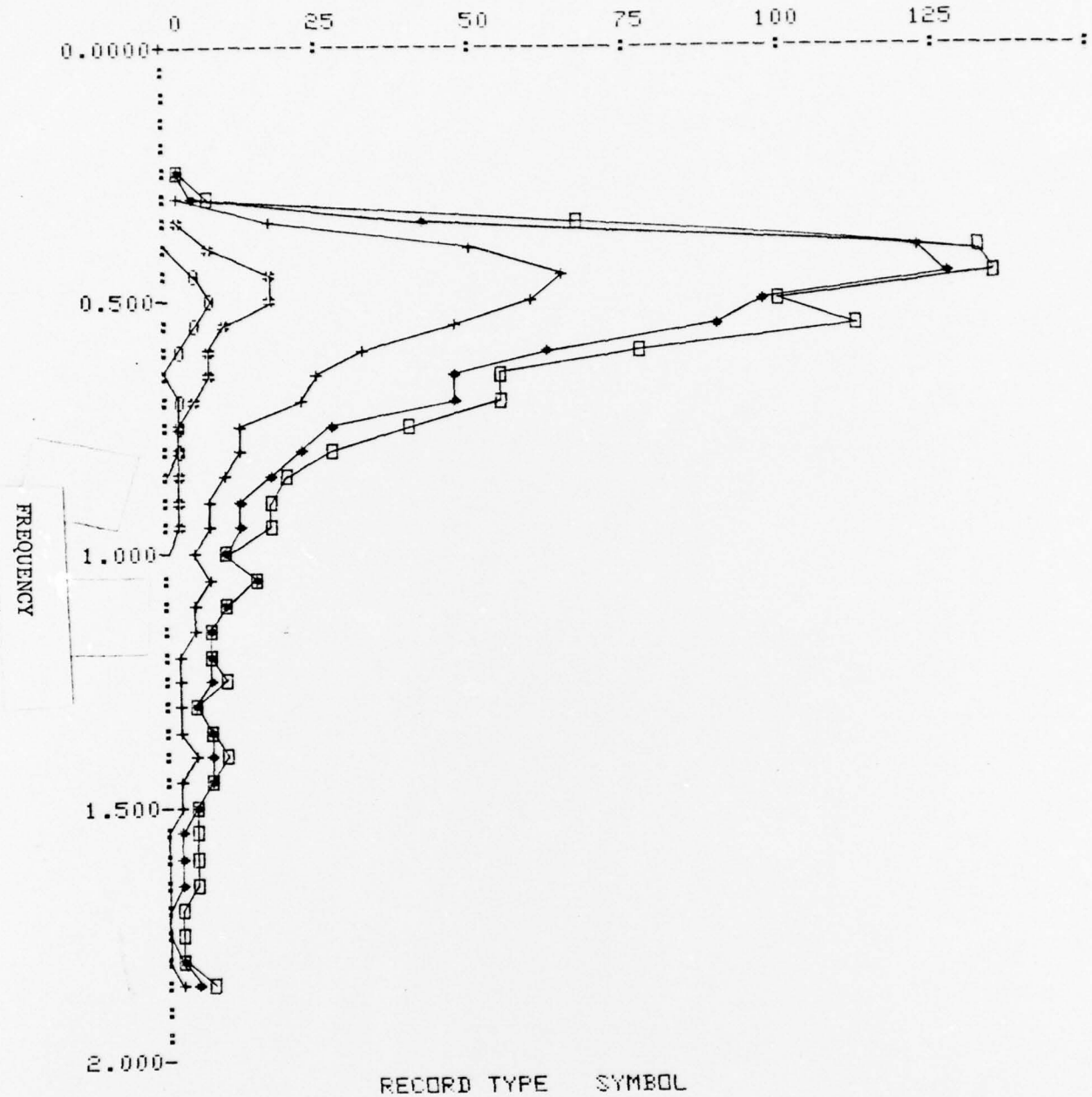


RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	◆
LOWEST-1/3	⌗
HIGHEST	□
LOWEST	0

RECORD NUMBERS , GROUP NO. 8:
42 43 55 61 69 89

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.311	0.1869	0.3726	0.5403	0.0000
0.250	0.389	0.8372	0.9933	1.8993	0.0829
0.300	0.467	2.4276	2.3056	5.3819	0.2470
0.350	0.545	16.5600	23.2178	41.7761	2.2206
0.400	0.622	49.7144	52.5107	123.2019	7.7096
0.450	0.700	64.3265	48.6124	127.8470	16.6614
0.500	0.778	59.8020	37.2942	97.5619	16.7555
0.550	0.856	47.2508	36.3449	89.2834	10.7477
0.600	0.934	32.8360	25.6536	62.4346	7.0164
0.650	1.012	25.3218	18.0033	48.0859	7.2484
0.700	1.089	22.5734	18.6245	47.1774	5.3857
0.750	1.167	13.2169	12.2697	27.2546	3.4078
0.800	1.245	12.0011	8.6615	22.6557	2.8147
0.850	1.323	10.1218	6.6996	18.7312	2.7625
0.900	1.401	7.5096	5.4116	13.6965	2.3487
0.950	1.478	6.3822	5.5232	12.8127	1.4520
1.000	1.556	6.1600	4.0471	10.3946	0.9720
1.050	1.634	7.3304	5.6125	14.2895	0.9289
1.100	1.712	5.6297	4.4958	11.0523	1.0306
1.150	1.790	3.9698	2.9396	7.7015	0.8923
1.200	1.867	3.5508	2.5144	6.5245	0.9386
1.250	1.945	3.0935	2.8570	6.2909	0.6792
1.300	2.023	2.2561	1.9793	4.9750	0.4725
1.350	2.101	3.2326	2.8000	6.4443	0.5081
1.400	2.179	3.9502	3.3189	7.6332	0.3498
1.450	2.256	3.2781	2.9896	7.0735	0.3030
1.500	2.334	2.1696	1.7977	4.3174	0.3111
1.550	2.412	1.3796	1.3215	2.7249	0.3977
1.600	2.490	1.3988	2.1129	3.7351	0.0000
1.650	2.568	1.1908	1.9067	3.2195	0.0000
1.700	2.645	0.4654	0.6409	1.1975	0.0452
1.750	2.723	0.4449	0.5132	1.1474	0.0000
1.800	2.801	0.8279	0.8455	1.8621	0.0000
1.850	2.879	1.5943	2.9028	4.5052	0.0000

H(1/3)	18.4184	MOM-M(-1)	38.0447
PERIOD-T1	9.7776	AREA-M0	21.2024
PERIOD-T-1	11.2743	1ST MOM-M1	13.6248
PERIOD-T2	8.9052	2ND MOM-M2	10.5550
PERIOD-T4	6.0096	3RD MOM-M3	10.0601
HC(1/3)	15.7119	4TH MOM-M4	11.5379
B	0.2934		
E	0.7380		
D	0.8531		
MAX. FREQ.	0.4500		
H1/3/LAMBDA	0.0185		
STD. DEV.M0	47.9459		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125
0.0000
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1.000
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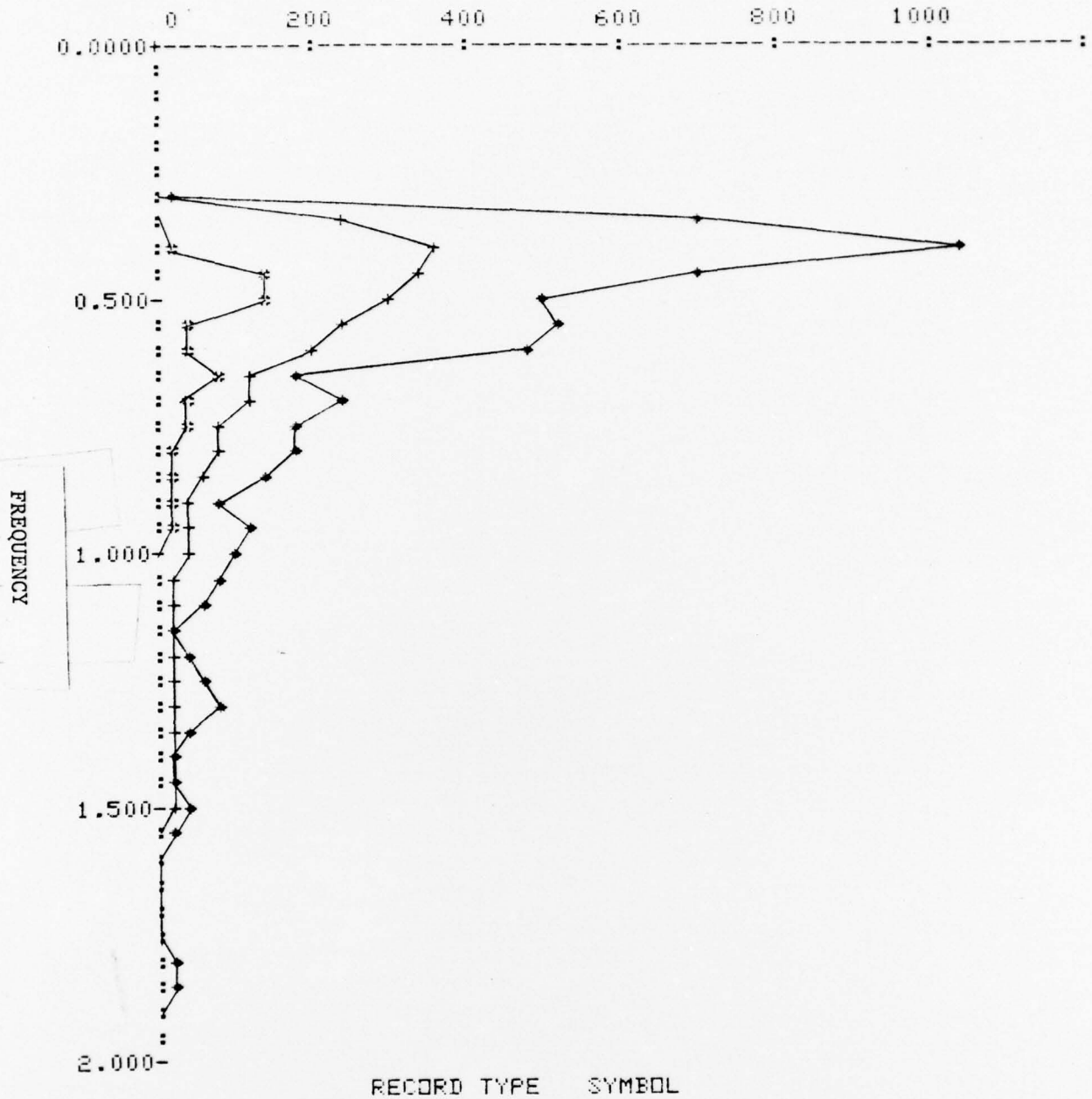
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
HIGHEST-1/3
LOWEST-1/3
HIGHEST
LOWEST

RECORD NUMBERS , GROUP NO. 9:
16 27 34

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.328	0.0158	0.0223	0.0474	0.0000
0.250	0.410	0.3000	0.1564	0.4639	0.0893
0.300	0.492	1.0900	1.0249	2.5317	0.2390
0.350	0.575	23.8197	32.7674	70.1599	0.6103
0.400	0.657	36.3793	47.6175	103.7183	2.2281
0.450	0.739	34.0719	26.1829	70.9886	13.1276
0.500	0.821	30.0100	15.2896	50.7526	14.3504
0.550	0.903	24.0500	19.9991	51.6482	4.8932
0.600	0.985	19.8026	20.3490	48.5762	4.9880
0.650	1.067	11.4857	5.2005	18.8001	7.1633
0.700	1.149	11.1829	8.7345	23.5147	4.3992
0.750	1.231	8.1213	6.8266	17.7754	3.2453
0.800	1.313	7.7123	7.3436	18.0660	1.8331
0.850	1.395	6.2929	5.6629	14.2976	2.0763
0.900	1.477	4.3511	3.2629	8.8974	1.3939
0.950	1.559	4.5922	4.5794	11.0685	1.3466
1.000	1.642	4.2004	4.4859	10.5443	0.9957
1.050	1.724	2.9127	3.4030	7.7231	0.3832
1.100	1.806	2.3117	2.1217	5.2915	0.5167
1.150	1.888	1.2748	0.9967	2.6501	0.3197
1.200	1.970	1.4273	1.6355	3.7297	0.0850
1.250	2.052	2.5320	3.1201	6.9438	0.2583
1.300	2.134	2.9034	3.6267	8.0320	0.2928
1.350	2.216	1.6174	1.8872	4.2829	0.1679
1.400	2.298	0.8683	0.6332	1.7071	0.1776
1.450	2.380	1.0531	0.9012	2.2464	0.0689
1.500	2.462	1.2066	1.4496	3.2453	0.0000
1.550	2.544	0.7420	1.0228	2.1883	0.0000
1.600	2.626	0.0355	0.0502	0.1066	0.0000
1.650	2.708	0.2128	0.1706	0.4176	0.0000
1.700	2.791	0.0743	0.0681	0.1701	0.0183
1.750	2.873	0.1252	0.0936	0.2250	0.0000
1.800	2.955	0.5224	0.4881	1.2088	0.1152
1.850	3.037	0.7301	0.9783	2.1129	0.0000

H(1/3)	14.0931	MOM-M(-1)	23.4274
PERIOD-T1	10.3139	AREA-M0	12.4135
PERIOD-T-1	11.8580	1ST MOM-M1	7.5622
PERIOD-T2	9.4265	2ND MOM-M2	5.5150
PERIOD-T4	6.4320	3RD MOM-M3	4.9128
HC(1/3)	12.0641	4TH MOM-M4	5.2628
B	0.3793		
E	0.7310		
D	0.8560		
MAX. FREQ.	0.4000		
H1/3/LAMBDA	0.0112		
STD. DEV.M0	75.3777		


SPECTRAL ORDINATE (FT2-SEC)
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400
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800
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0.500
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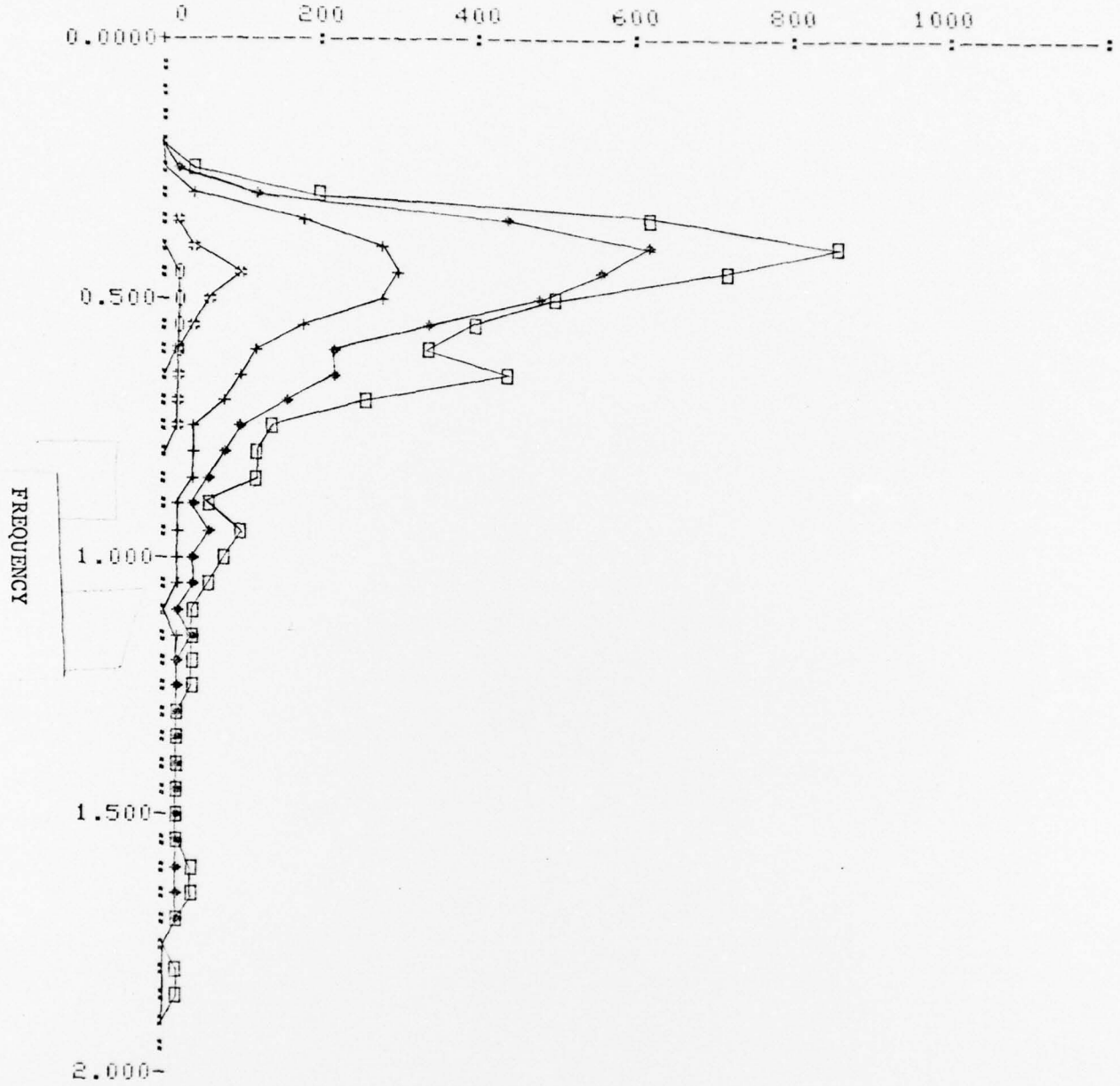
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
HIGHEST-1/3
LOWEST-1/3

RECORD NUMBERS , GROUP NO. 10:
17 20 25 26 35 51 62 68 72 73 77 90

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.345	0.1049	0.1527	0.2643	0.0027
0.250	0.432	0.7066	0.9411	1.7553	0.0751
0.300	0.518	4.0271	5.8327	11.1298	0.2193
0.350	0.604	17.1550	21.1173	43.9897	1.0201
0.400	0.691	27.8628	27.4521	62.0864	4.3610
0.450	0.777	30.5226	21.0004	56.8441	9.4934
0.500	0.863	27.6094	17.7507	47.2468	6.7280
0.550	0.950	17.8666	12.9032	33.6010	3.8430
0.600	1.036	11.0755	9.1766	22.1757	2.8018
0.650	1.122	10.2404	11.8724	22.3883	2.1630
0.700	1.209	7.4104	8.0715	15.8465	1.6283
0.750	1.295	4.6472	4.0227	9.4205	1.1840
0.800	1.382	3.9915	3.6778	8.3858	0.9182
0.850	1.468	3.1525	3.1940	6.7497	0.6601
0.900	1.554	2.4648	1.8322	4.6282	0.5708
0.950	1.641	2.5244	2.4642	5.0978	0.4265
1.000	1.727	2.1795	2.3631	4.9670	0.2968
1.050	1.813	1.7093	1.6086	3.6551	0.2920
1.100	1.900	1.3053	1.0845	2.5521	0.2274
1.150	1.986	1.3566	1.2529	3.0047	0.2462
1.200	2.072	1.1738	1.1035	2.5521	0.2085
1.250	2.159	1.0941	1.0071	2.3963	0.2352
1.300	2.245	0.9268	0.8829	2.0123	0.1943
1.350	2.331	0.6234	0.6483	1.3153	0.1442
1.400	2.418	0.5748	0.4730	1.2056	0.1103
1.450	2.504	0.4687	0.5133	1.1224	0.0318
1.500	2.590	0.7106	0.8436	1.7459	0.0331
1.550	2.677	0.7404	0.9759	1.9536	0.0307
1.600	2.763	0.6540	0.8774	1.6420	0.0740
1.650	2.849	0.7440	1.0495	1.8952	0.0444
1.700	2.936	0.5103	0.6752	1.3336	0.0266
1.750	3.022	0.2428	0.2276	0.5406	0.0269
1.800	3.108	0.1932	0.4837	0.5457	0.0000
1.850	3.195	0.1689	0.4473	0.4895	0.0000

H(1/3)	12.2211	MOM-M(-1)	18.4285
PERIOD-T1	10.8506	AREA-M0	9.3347
PERIOD-T-1	12.4043	1ST MOM-M1	5.4054
PERIOD-T2	9.8907	2ND MOM-M2	3.7671
PERIOD-T4	6.5118	3RD MOM-M3	3.2748
HC(1/3)	10.3463	4TH MOM-M4	3.5072
B	0.4479		
E	0.7527		
D	0.8466		
MAX. FREQ.	0.4500		
H1/3/LAMBDA	0.0122		
STD. DEV.M0	39.3059		

SPECTRAL ORDINATE (FT^2-SEC)

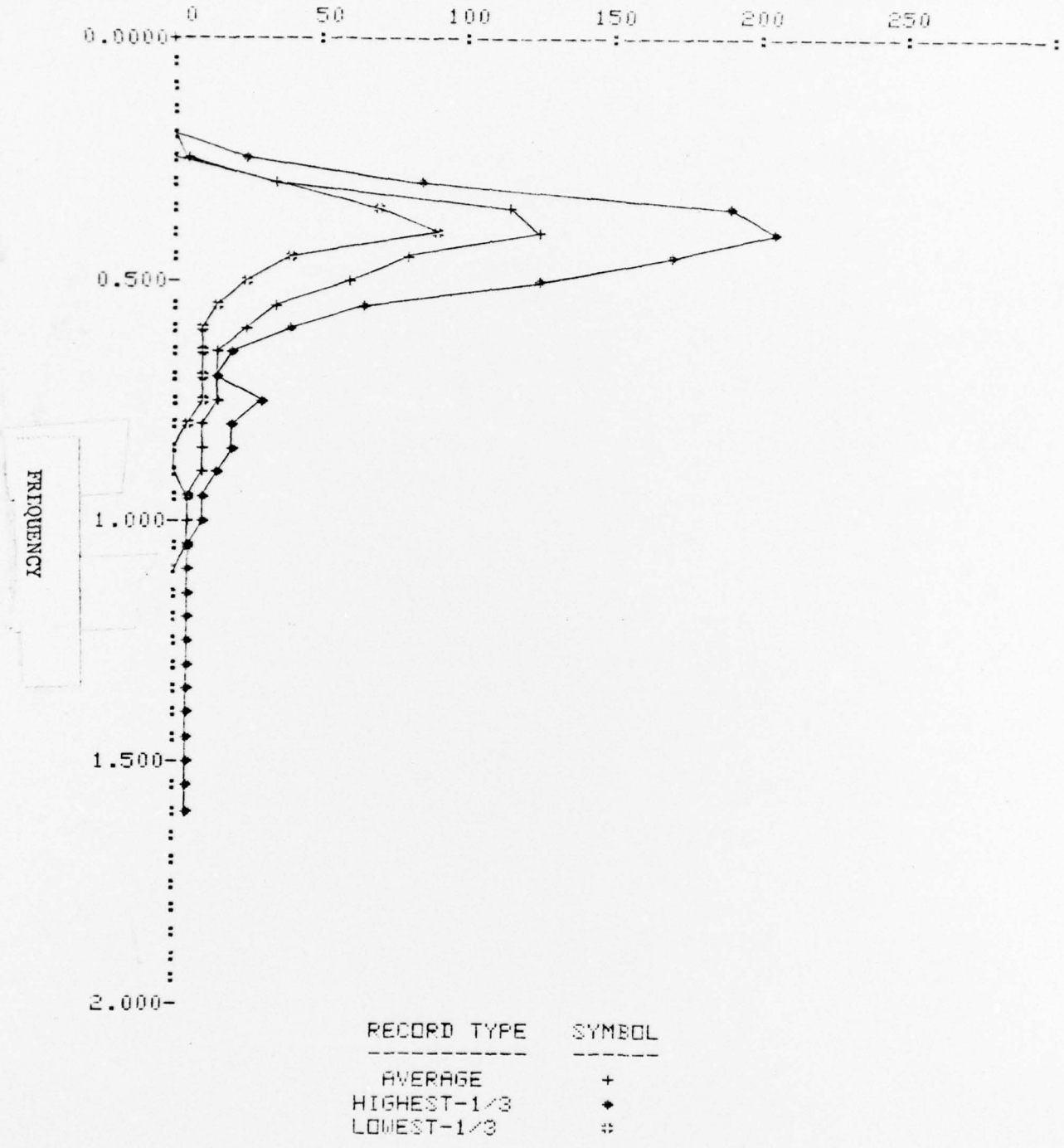


RECORD TYPE	SYMBOL
AVERAGE	+
HIGHEST-1/3	◆
LOWEST-1/3	✲
HIGHEST	□
LOWEST	0

RECORD NUMBERS , GROUP NO. 11:
11 21 54 63

W	W*T/2*PI	AVERAGE	STD. DEV.	HIGHEST-1/3	LOWEST-1/3
0.200	0.383	0.1746	0.1896	0.4951	0.0000
0.250	0.479	6.4782	9.8135	23.4555	0.3907
0.300	0.574	33.6179	33.1750	83.0657	2.3594
0.350	0.670	115.2259	47.5811	191.8440	68.8897
0.400	0.766	123.9468	47.9987	205.8166	89.0741
0.450	0.861	82.2398	52.0183	170.2733	39.7961
0.500	0.957	58.5771	41.0731	124.9930	23.5230
0.550	1.053	34.8200	21.8141	67.0265	13.9908
0.600	1.149	23.8419	14.6149	41.3213	8.3517
0.650	1.244	16.4332	4.1394	20.6537	12.0566
0.700	1.340	13.4158	2.5733	16.8616	10.5346
0.750	1.436	14.5277	8.7653	29.5694	7.5734
0.800	1.532	10.9719	6.5465	22.1778	6.1806
0.850	1.627	9.7956	5.9820	18.9099	2.4778
0.900	1.723	9.1910	5.4937	16.8626	2.2927
0.950	1.819	5.6882	2.7834	9.4776	2.7276
1.000	1.914	3.7020	2.2057	7.5067	2.2432
1.050	2.010	3.9920	1.3168	6.0364	2.6038
1.100	2.106	3.1288	1.3634	5.3281	1.5995
1.150	2.202	2.8586	1.2432	4.8211	1.5446
1.200	2.297	2.8597	1.2387	4.1882	1.4542
1.250	2.393	3.4364	1.5229	5.6801	1.5866
1.300	2.489	2.7004	1.3616	4.4013	0.9483
1.350	2.584	2.2440	0.8119	3.3659	1.0710
1.400	2.680	2.1447	1.6204	4.9492	1.1377
1.450	2.776	1.8011	1.4854	4.2377	0.3401
1.500	2.872	1.7887	1.4487	4.1710	0.6157
1.550	2.967	1.4348	1.5035	3.9859	0.2982
1.600	3.063	1.1969	1.0154	2.8094	0.0000
1.650	3.159	1.4537	0.8815	2.2561	0.0000
1.700	3.254	1.1749	0.6811	1.9138	0.0861
1.750	3.350	0.7467	0.5005	1.5489	0.1701
1.800	3.446	0.4222	0.4645	1.1184	0.0000
1.850	3.542	0.2282	0.3952	0.9128	0.0000

H(1/3)	21.8398	MOM-M(-1)	65.8598
PERIOD-T1	12.0285	AREA-M0	29.8112
PERIOD-T-1	13.8810	1ST MOM-M1	15.5721
PERIOD-T2	10.8320	2ND MOM-M2	10.0305
PERIOD-T4	6.7421	3RD MOM-M3	8.3244
HC(1/3)	18.1902	4TH MOM-M4	8.7113
B	0.2620		
E	0.7827		
D	0.8329		
MAX. FREQ.	0.4000		
H1/3/LAMBDA	0.0173		
STD. DEV.M0	71.0462		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50
100
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0.500
1.000
1.500
2.000
FREQUENCY
RECORD TYPE
SYMBOL
AVERAGE
HIGHEST-1/3
LOWEST-1/3

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

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19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

ENVIRONMENTAL DATA

WAVE SPECTRA

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report presents the results of the analysis of a limited sample of wave spectra obtained for Station 'Kilo' in the North Atlantic (93 records). Correlation of measured parameters, such as wave height and period, with surface log data (wind speed, observed wave height) is presented.

Wave spectra were grouped by height and by period and resulting average parameters compared. Plots are given of the spectral families. Because of the limited sample available for Station K, results are less conclusive than for Staion I.

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